The RUBBER AGE

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# LATE NEWS of the Industry

## Raybestos-Manhattan, Inc., Report Shows Earnings of $241,203 in First Quarter

DESPITE a heavy increase in sales during March, net profits in that month for Raybestos-Manhattan, Inc., failed to average higher than for the preceding two months and the total net earnings for the quarter ended March 31 were, therefore, held down to $241,203 as against preliminary estimates of close to $300,000. The actual figure, which is calculated after providing $137,295 for depreciation of buildings and machinery and $35,075 for federal and state income taxes, is equal to 35 cents a share on the 676,012 shares of capital stock outstanding. It compares with an operating loss of $95,206 in the quarter ended December 31, 1930, and with net earnings of $450,975, or 67 cents a share, in the quarter ended March 31, 1930.

Sales for the first quarter totaled $3,572,283 as against $4,815,627 in the first three months of last year. Sales in March alone were $1,399,862 and net income in that month amounted to $81,596.

The balance sheet at the end of March showed current assets of $8,500,788, including cash, municipal bonds and other marketable securities of $3,164,914, and current liabilities of $732,813, a ratio of 11½ to 1. The company has no bank loans, funded debt, or other capital obligations, other than its common stock. Merchandise inventories on March 31 totaled $3,328,214.

The directors declared the usual quarterly dividend of 65 cents a share on the common stock. This will be paid June 15 to stockholders of record May 29.

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## Exports of Automotive Rubber Goods Showed Gain During Month of April

EXPORTS of automobile tires, inner tubes, tire sundries and repair materials from the United States during the month of April had a total value of $2,620,888, representing the highest figure for any month thus far this year and comparing with the March total of $2,459 755. Spain was the chief market for passenger car casings, measured by value, and was second to Japan as a customer for truck and bus casings. In number of casings, however, British India was first in both classes. Argentina, for years the leading export market for passenger car casings, dropped to fifteenth place. In the month 160,757 passenger car casings were exported with a value of $1,249,040 and 42,827 truck casings, worth $1,059,209.

Rubber boots exported during the month totaled 28,468 pairs with a value of $72,109, and rubber shoe shipments numbered 81,780 pairs with a value of $57,116. Exports of canvas rubber-soled shoes fell off to 223,496 pairs with a value of $149,334. The United Kingdom was the leading market for rubber boots and canvas rubber-soled shoes and also for rubber shoes in respect to number. The Netherlands was the chief customer for the latter in respect to value.

Shipments of rubber belting in April amounted to 327,091 pounds, worth $148,371, and exports of rubber hose totaled 465,252 pounds with a value of $152,419. Belgium was the principal market for the former and Mexico for the latter.

During April, the United States exported 1,293,462 pounds of reclaimed rubber, valued at $65,977, or 5.10 cents a pound as against an average value of March exports of 4.87 cents a pound, and 3,805,705 pounds of scrap and old rubber, worth $106,288. Canada remained our best customer for reclaim, while Spain continued to be far ahead of all other markets for rubber scrap.

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## Fisk Rubber Company Receivers Hope To End First Half-Year Without Loss

DENYING rumors to the effect that the Fisk Rubber Company would close its factory this month, Roland W. Boyden and Charles A. Dana, equity receivers for the firm, have announced that operations for the four months ended April 30 were on a profit-making basis and that they expect to close the first six months of 1931 without loss. In view of the heavy losses the company has suffered during the past three years, this reversal of the trend of operations under the management of the receivers is considered remarkable.

"Reports that the Fisk Rubber Company contemplated discontinuance of manufacturing operations June 1 are entirely without foundation," the receivers stated. "The company is operating its Chicopee Falls plant five days a week and intends to continue this schedule.

"Operations for the first four months were conducted without loss. Indications are that earnings for the first six months of the year will be sufficient to absorb all ex-

penses, including depreciation, with inventories at current market values."

Mr. Boyden and Mr. Dana were named as equity receivers for the Fisk Rubber Company on January 3 on the petitions of the Central Hanover Bank & Trust Company and the Chase National Bank, both of New York City. The receivership followed ineffectual attempts on the part of heads of the Fisk Rubber Company to effect reorganization and to arrange for the meeting of notes amounting to $8,199,500, which became due January 1.

H. T. Dunn, president of the company, announced in December that it would be impracticable to pay the principal and interest on the maturing 5½ per cent gold notes and at the same time estimated that the company would have a net loss for 1930, after all charges, of about $6,700,000. The company lost $7,496,457 in 1929 and $8,791,251 in 1928.

## Automotive Parts and Accessory Trade Showed Marked Improvement During April

FINAL figures from manufacturers of automotive parts, accessories and service equipment indicate that April continued the upward swing that has been evident since the first of the year, with each month better than the preceding one, according to the Motor and Equipment Association, which includes several rubber manufacturers in its membership.

The advance took place both in shipments to car manufacturers for original equipment and to wholesalers for distribution to the replacement trade. Increased shipments to car manufacturers bear out estimates of a gain in car production for May.

The grand index of shipments for all groups of manufacturers members reporting their figures to the association for April stood at 124 per cent of the January, 1925, base index of 100 as compared with 113 for March, 93 in February, and 163 for April, 1930.

## Lee Rubber & Tire Corporation Shows Net Loss of $193,201 for Six Months

THE Lee Rubber & Tire Corporation, of Conshohocken, Pa., and its subsidiaries have reported for the six months ended April 30, 1931, a net loss of $193,201 after depreciation and interest charges. This compares with a net loss of $64,614 in the corresponding six months of the previous fiscal year and with a net profit of $227,270, equal to 76 cents a common share, in the six months ended April 30, 1929.

Net sales for the period dropped sharply to $2,769,713, as compared to $4,211,461 in the same period a year ago and to $4,868,479 in the six months ended April 30, 1929. In the current year, the company reports an operating loss of $208,321 and interest charges of $22,659. Other income, however, amounted to $37,779, thus bringing the net loss to the figure of $193,201.

To meet competitive conditions last year, Lee adopted a plan of budgeting of the company's affairs so as to remain in the strongest financial position possible. The result was an appreciable reduction by last October of the company's bank debt and other liabilities. This was reflected in the low interest charges for the first half of the current year as compared to $57,975 last year and $60,350 the year before. In the full year ended October 31, 1930, the company reported a net loss of $799,111.

The market for the common stock of the Lee Rubber & Tire Corporation this year has fluctuated between 2¼ and 4¾ and current quotations on the New York Stock Exchange are in the neighborhood of 3. During 1929, the stock dropped from a high of 25 to a low of 5 in the October-November crash and last year sold as high as 11 and as low as 3⅛.

The consolidated income account for the six months ended April 30, 1931, compares with the corresponding periods of the past two years as follows:

| | 1931 | 1930 | 1929 |
|---|---|---|---|
| Net sales | $2,769,713 | $4,211,461 | $4,868,479 |
| Exp. dpr., etc. | 2,978,034 | 4,269,125 | 4,630,934 |
| Oper loss | $208,321 | $57,664 | †$237,545 |
| Other inc. | 37,779 | 51,025 | 50,075 |
| Loss | $170,542 | $6,639 | †$287,620 |
| Interest | 22,659 | 57,975 | 60,350 |
| Net loss | $193,201 | $64,614 | †$227,270 |

†Profit.

## Master Tire & Rubber Company Seeking To Acquire the Murray Rubber Company

NEWSPAPER reports from Akron, though not confirmed by any official statement, declare that the Master Tire & Rubber Company of Ohio is completing negotiations to acquire the Murray Rubber Company, Trenton, N. J. The Master Tire & Rubber Company is a holding company which now controls the Falls Rubber Company, Cuyahoga Falls, O., and the Cooper Corporation and Giant Tire & Rubber Company, both of Findlay, O.

Frank C. Millhoff, vice-president of the Master company, admitted that a deal "for an eastern factory" might be consummated soon. "The concern we expect to absorb," he stated, "is now in the hands of a receiver, but is doing a business of about 1,800 tires a day and has a capacity of about 2,500 casings a day."

While Mr. Millhoff would not name the actual factory under consideration, the Murray Rubber Company has approximately the capacity mentioned and has been operating since last November under the receivership of its vice-president, Alfred H. Branham.

The Murray firm has shown important progress since the first of the year under the management of Mr. Branham. Production has been doubled in that time, and the working force increased by 100 additional men since April 1. Net sales in March amounted to about $108,000, according to a report made to the federal court, while April sales were estimated at 40 per cent ahead of March. Net profit from March operations was $6,700, as against a loss of about $3,000 in February.

Mr. Millhoff explained that the elasticity of a small business enables his organization to cope with the rise and fall of demand. "Probably we could more profitably operate the Findlay business out of the Falls plant if we had sufficient space in our Falls factory," he stated. "The situation that inspires the desire to obtain an eastern plant is the fact that with such an institution we could acquire a list of excellent dealers and would tap a territory in which we are not now active."

## Firestone Earns $2,908,553 in Half Year

The Firestone Tire & Rubber Company and all subsidiaries, including Firestone Service Stores, has reported for the six months ended April 30, 1931, a net profit of $2,908,553 after charges, equal after preferred dividends to 56 cents a share on the common stock. Comparing with a net of $2,320,118 in the same period last year, this caused Firestone common to rally to a new high of 21½ on June 5. A detailed analysis of the report will be published in the June 25 issue of THE RUBBER AGE.

**(Other news of the industry will be found on Pages 225-231)**

# A. S. T. M. Annual Meeting To Study Abrasion Testing

## Exhibition of Materials Testing Equipment to Feature Session This Month at the Stevens Hotel in Chicago

DURING the annual meeting of the American Society for Testing Materials to be held in Chicago, June 22-26, a symposium on abrasion testing of rubber will be given, consisting of the five papers abstracted below. This symposium may be considered as a decennial celebration of the work on abrasion testing of the Society's Committee D-11 on Rubber Products.

According to H. A. Depew, chairman of the subcommittee, the early activities of the abrasion group, while still a part of the performance test committee, consisted in an investigation of the ability of laboratories to obtain check results, using existing abrasion machines, with the result that abrasion testing was found to be as reliable as tension testing. The test activity was an extensive comparison of service and laboratory tests, which showed a good correlation under favorable circumstances. The present activity of the Subcommittee on Abrasion has progressed in the direction of investigating the nature of abrasion, including the question of the relative importance of tear resistance and cutting resistance.

The opening day is set aside for registration and committee meetings, while the first actual session is scheduled for the morning of Tuesday, June 23, at which time there will be presented reports of administrative committees and discussions of nomenclature and testing. The session will close with a paper by R. L. Templin and R. G. Sturm on "Methods for Determining the Physical Properties of Rubber Compounds."

The fifth session of the convention, starting at 8 P. M. on June 23, will be devoted to rubber and textiles. H. J. Ball, chairman of Committee D-13 on Textile Materials will report new specifications and test methods for enameling duck for the tire industry and revisions in specifications for chafer tire fabrics. C. R. Boggs, vice-chairman of Committee D-11 on Rubber Products, will report progress on subcommittee activities and announce the organization of a new subcommittee on dynamic fatigue testing.

The meeting of the society will be featured this year by an exhibit of testing apparatus and machines. These will be displayed in the exhibition hall of the Stevens Hotel and will include many new developments of interest to rubber technologists.

### ABSTRACTS

#### Study of a Test for Tear Resistance of Vulcanized Rubber Compounds

A. W. Carpenter and Z. E. Sargisson
*The B. F. Goodrich Company*

THE paper gives results of tearing tests using compounds of which the abrasion resistance has been investigated by Subcommittee XIV on Abrasion, of the Society's Committee D-11 on Rubber Products. Comparison is made between tear resistance, abrasion resistance and stress-strain tests. The tear test procedure and the required equipment are described. The method is not new but has not been previously described in detail. Effect of variations in compounding, mechanical handling and cure of the rubber stocks is discussed.

#### Abrasion Tests of Vulcanized Rubber Compounds Using an Angle Abrasion Machine

J. L. Tronson and A. W. Carpenter
*The B. F. Goodrich Company*

THE machine used and the method of test in the abrasion testing of vulcanized rubber compounds are described. Data are presented on the effect of variations in load, speed, temperature and the size of the test specimen. The state of cure and effect of accelerated aging is also considered. Comparisons are made with road tests on several tire tread compounds. The machine has given results on tread stocks comparable to the results obtained in road tests. The machine is useful for development purposes and may be used to replace service tests in some of the preliminary work now being done on the road.

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#### The Measurement of the Work Done in Punching a Rubber Cylinder from a Test Sheet

H. A. Depew, S. I. Hammond and E. G. Snyder
*New Jersey Zinc Company*

AN apparatus consisting of a pin working through a circular opening in a die has been constructed that measures the work done in punching at high speed a rubber cylinder from a test sheet. The test has been found to be essentially cutting. Shear, which requires rigidity, is not involved. The deformability of rubber causes the work of cutting to be large and an important factor in abrasion resistance.

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#### Abrasion Testing of Rubber with the Bureau of Standards Type Machine

Warren A. Glancy
*Hood Rubber Company*

THERE are several types of machines used for the abrasion resistance of rubber which give satisfactory results. Most of these, however, require comparatively large samples and were perhaps designed more for tire tread work than for general use. The paper described experience with a machine similar to that developed at the U. S. Bureau of Standards. The results obtained warrant considerable confidence in this machine. Figures are given which show good agreement between optimum cure as determined by tensile strength tests and by this abrasion method. Road tests and machine tests show good agreement. It is concluded that the advantages of this machine (and of the present Bureau of Standards machine) are such as to warrant greater interest on the part of rubber laboratories.

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#### Comparative Tests of Four Abrasion Machines

C. A. Klaman
*New Jersey Zinc Company*

TESTS using four different abrasion machines agreed with road service satisfactorily in the case of stocks cured to the optimum, but they did not correlate well in the case of uncured or overcured stocks. Accordingly none of the machines can be considered suitable for specification work, but they are all desirable laboratory tools for studying rubber products where the state of cure can be determined. The reproducibility of results was satisfactory, check results showing an average deviation from the accepted average of 3.5 per cent. The difference in reproducibility of results with different machines may have been in part due to more experience with some machines than with others.

# Breaking Down Sales Resistance by REODORIZING Rubber Goods

REODORIZING rubber goods as an effective means of breaking down possible sales resistance arising from the complaints of a large class of consumers against the "rubbery smell" of certain products is being practiced more and more by manufacturing companies and especially those producing for the drug sundries trade. In the current issue of *The Vanderbilt News* a study is made of the nature and sources of this rubber odor. It appears to arise from several causes. The pure latex as it comes from the trees has a distinct and by no means pleasant odor which is not wholly eliminated in the processing of preparation crude rubber for the market. Even the finest grades of raw rubber are not free from odors and all the various classes of crude rubber have their distinctive smell,—Para, smoked sheets, amber crepe, Acre, Caucho Ball, etc. These original odors persist through the various processes in the manufacture of rubber articles.

Apparently crude rubber producers have not succeeded in producing 100 per cent odorless rubber. Nor is there any evidence that they have given it any thought. There is an opportunity in this field which is being overlooked and producers could do well to give the matter some serious consideration.

Another possible source of odor in manufactured rubber goods is in the compounding materials used, such as sulphur, accelerators, oils and pigments. A great many of these are practically odorless but some have a distinct smell or a slight odor, which is more or less difficult to define. Also, during the process of curing, some of these ingredients react with others, developing new odors, still more difficult of classification. Thus when the manufactured article is complete it may be possessed of an odor which is the resultant of the virgin smell of rubber, the odor of ingredients and the odors from the reactions of the combination.

A third cause for the rubbery smell in articles which have been in use, is deterioration or souring. This smell of the oxidation of rubber usually only comes through age or improper storage and does not play a part in freshly made articles. The use of antioxidants is tending to eliminate this cause or odor.

### Effectiveness of "Rubber Aromatics"

With the recent development of "rubber aromatics" this rubbery smell need no longer be regarded as a necessary evil and from now on the compounder will have a new factor to reckon with in his specifications. The aromatic materials which have now been developed will, when incorporated with rubber, withstand the destructive effect of vulcanization and impart a pleasant and lasting odor to the finished product. Others have also been worked out which will merely neutralize or offset the offensive rubbery odor, leaving the finished product practically odorless.

Factors which have to be considered in the development of reodorizing materials are: the ability of the aromatic material to withstand vulcanization without losing its pleasant odor; the material must not retard the rate of vulcanization; it must not affect adversely the aging quality of the stock; the material must be strong enough to be effective in small dosages and must not discolor the rubber.

The strength of the odor desirable may be regulated by the color and size of the articles. For light or pale colors a mild odor, not too intense, should be used; for darker or deeper colors, the odor may be heavier and more intense. A large voluminous article like a bath curtain, for example, should have a less intense odor than a small article like a bath sponge.

The following list of rubber articles for household and personal use, all of which, as made today, may be subject to criticism from the point of odor, can be reodorized to advantage by manufacturers.

Hot water bottles and similar articles
Bathing caps and shoes
Gloves
Sponges
Toys of all kinds
Soap dishes, coasters for beverage glasses, flower-pot holders
Elastic bands
Aprons
Elastic garments (pure rubber and rubber textile)
Dress shields
Babies' articles of apparel
Hospital sheeting
Toilet bags
Shower bath curtains
Raincoats
Rubber upholstery materials
Bath and sink mats

The above, however, are only a few of the possibilities for the use of reodorizing agents in rubber manufactured goods. Now that it has been definitely established that the odor of rubber goods is objectionable, it must be clear that any practical means of removing or "sweetening" the rubbery smell will go far to increase the popular demand for rubber goods.

## AgeRite Gel

AGERITE GEL is the latest member of the AgeRite family of antioxidants to be marketed by the R. T. Vanderbilt Company. It is designed for general use and may be handled, it is claimed, with almost any type of compound with excellent results. In a few instances it may be found advantageous to use it together with one of the other AgeRite antioxidants.

AgeRite Gel is a combination or composition consisting of ditolylamines and a selected petroleum wax. It is of a soft waxy consistency and melts at about 65 degrees C., to a clear oil which does not separate on cooling; is pale grayish white in color and has the usual odor of all ditolylamines. No toxic properties have been noted in 18 months of laboratory and factory work. It acts to some extent as a rubber softener; dissolves easily and in high concentrations in the rubber; does not bloom when used in amounts up to and over 2 per cent on the rubber and disperses readily. It is an active anti-flexing and anti-sun-cracking agent; has good heat resisting qualities; does not stain during cure and discolors white and colored stocks less than most strong antioxidants and imparts to the finished product a smooth, glossy finish.

The new product is not intended to replace the other already well known members of the AgeRite family. It is intended more as a general antioxidant and, it is claimed, may be found useful by those who, for one reason or another, have had difficulties in applying other antioxidants.

# *The* High Cost *of* Obsolete Equipment

## Out-of-Date and Inefficient Machinery in Rubber Factories Often Mean Unnecessary Losses in Production, Greater Maintenance Costs, Higher Labor Payroll and Abnormal Depreciation Charges

*By* George Rice

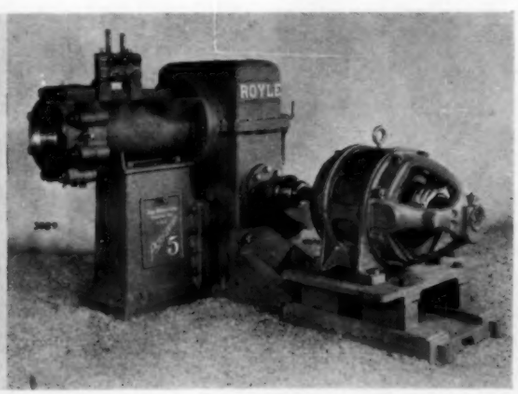
ONE of the commonest causes of failures among manufacturers of all kinds of products is due to the tendency to continue in operation machinery which may be mechanically good, but obsolete because improved models of the same kind can do the work more economically and perhaps better. Curious enough, a great many men who are holding high positions in rubber manufacturing plants, and who are noted for their business ability, fail to recognize this fact, as everyone knows who has any connection with the selling, installing and operating of new machinery and equipment.

The writer, in his tours of the factories and shops, often sees many fine plants headed for disaster because their steam plant, their system of power transmission or their machinery need revamping. Having been a mechanical engineer, a fireman in a boiler room and a general roustabout in rubber factories and textile mills, his eyesight has been trained to detect the difference between equipment which may be mechanically good and profitable to operate and equipment which is mechanically good but not profitable to operate. The foremen and the operatives in the plants may likewise know the difference, for they are in touch with the equipment. But the men in the office frequently take another view of the situation and insist that the old equipment be kept running so as to save the cost of new.

It is a natural stand to take. We know of factory officials who buy a new car model every season who will not think of replacing even worn machinery in their plants after so long service that the shafts wabble and run unsteadily in the boxes, the gears creak, and the various mechanical movements operate under trying conditions. So the question evolves around the actual status of the equipment, as to whether it is mechanically obsolete and uneconomical to run because it is really worn out and ready for the junk pile, or whether it is mechanically obsolete because a more improved model will be more profitable to run.

Rubber factory machinery and equipment has not only been effectively and scientifically developed to a point of great efficiency, but it has been standardized to a remarkable degree within recent years. It would seem that any improvements possible to make in rubber machinery of the present time must be in the minor details, yet there frequently appears some new type of rubber machine constructed along better lines, the product of inventive genius and mechanical design. From the power plant to the finishing department of a rubber working plant there is probably more machinery in operation than in most manufacturing plants because of the variety of products produced in which the contents are all rubber or part rubber. In some of these plants one will find an orderly state of affairs, the machinery up-to-date and running smoothly and the company apparently making money. In other plants the conditions will be found to be the reverse, with old and patched machinery operated under forced pressure, and in most instances with the company's balance sheet showing a periodical financial loss.

In one rubber plant where there were visible signs of an early shutdown because of the absence of profits on the manufactured products the writer's attention was called to a piece of power transmission equipment which had to drive the counter-shafting for five machines on the main floor. All were good machines, but running below their normal speed and turning out unsatisfactory work because of the loss of motion and unsteadiness of the drive, evi-




**Modern Equipment Lowers Costs Due to Greater Efficiency**

Left: First *Royle* Tuber, made in 1880, Produced as High as 10,000 Feet per Day, which was phenomenal for that time, as compared with Modern Production.

Right: Modern *Royle* Worm Geared Tuber, used for Straining and Large Tubing Products. Has Strained as High as 2½ Tons per Hour.

dently a partly home made affair, rigged up with odds and ends of shafts, pipes, and hangers. We show what the affair looked like in Figure 1. Lacking the proper iron hanger, a wooden contrivance was put up and a common iron pipe section attached for the horizontal shaft above and the upright shaft at the right,—an exceedingly crude device, although it ran and conveyed the power to the driven ma-

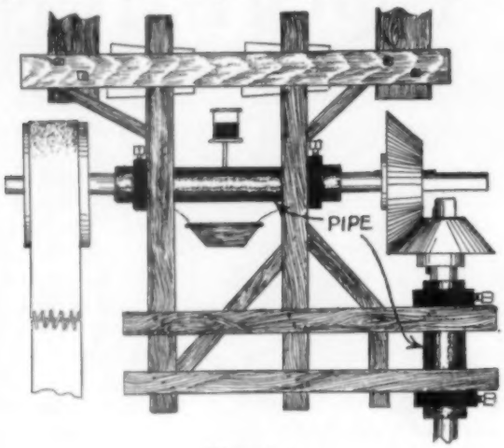



**Figure 1**

This crudely constructed arrangement for the transmission of power to five machines in a rubber factory interfered both with the quantity and quality production of these machines.

chines, but in such a slovenly manner that the production was lowered.

There are four major reasons why the steam plant, the power transmission system or the machinery of a rubber plant may be run profitably or the reverse and these may be summed up as follows: The machinery, or any part of the plant, may be uneconomical to operate on account of its being mechanically unfit, due to the normal process of secular deterioration, after it has been run long enough to start the parts to wearing, springing and backlashing.

It may be uneconomical to operate because of progressive extensions and changes in the building, requiring the machines to be shifted about, on differently arranged floor spaces, sometimes subjected to a top drive when before it was driven from a belt connection from below. The bearings get altered and often the disturbance develops binding and grating and loss of power and production.

Or a radical change in the product or the methods of production of the same product may throw a formerly well behaved machine into the discard. Usually, however, the proper corrections and adjustments are made when an expert is called in.

The most serious drawback arises when, for reason of capital costs, the management hesitates to go to any great expense in the matter of replacements of machinery and equipment when such replacements are necessary. We have seen a number of good plants go on the rocks because of this attitude taken by the officials in charge, regardless of the fact that all well managed rubber factories can finance almost any reasonable requirements for new equipment.

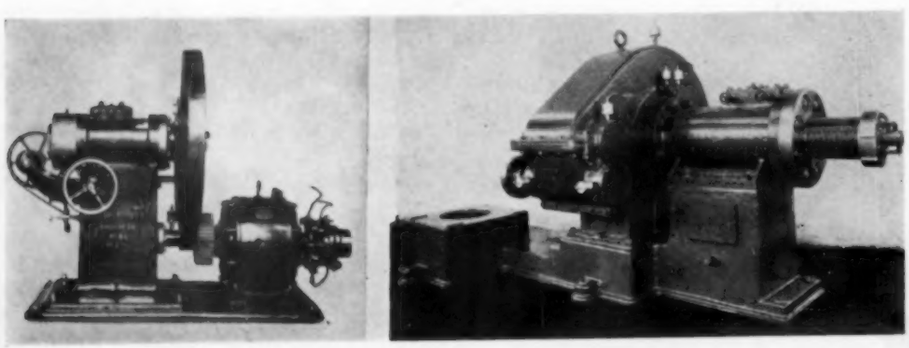
Business depressions, fires, a falling off in orders and various other conditions often arise in rubber factories, the same as in any of the industries and make it necessary for the management to have financial help from the banks. It is becoming more and more customary for a banker to inspect the equipment of a plant, or have an engineer do it for him, before he decides upon the amount he is willing to risk. If the plant is found to be in a run-down-condition, the chances of getting capital are nullified, even if the business appears to be prosperous. A banker knows at once that machinery which has been running until it is worn or is of obsolete design cannot produce fast enough or good enough to compete with plants more favorable provided with manufacturing facilities. He knows that the latter factories can produce better goods at a lower cost and that before long they will get the business from the former, resulting perhaps in their shutting down or going out of business together with any money invested in them.

### Efficient Equipment Means More Borrowing Power

As a rule, a manufacturing concern that has a good reputation for its business ability and at the same time has given reasonable attention to the upkeep of its plant, experiences but little trouble in borrowing for the purpose of installing more modern machinery.

In a case which came to the writer's notice recently, a manufacturer of rubber goods desired to add an addition to his present building so as to operate more machinery to keep up with orders. He happened to be running on a line of goods which were in demand and was doing well even though his equipment from the steam plant to the last machines was not modern in design, nor well maintained. Some of it had been running as long as 30 years and was patched, braced and underspeeded as compared with machines of the same kind of later design. He applied to his banker for the necessary finance to build the addition and equip it with the required machinery, involving an investment of about $80,000.

The banker's investigator reported adversely on the project because of the unsatisfactory conditions he found existing in the building already operating. His report was something of a curiosity, but was the means of causing the banker to refuse the loan although evidence was shown that the factory was making money. The report referred in detail to worn shafts of certain machines, slipping belts on creaking and groaning wheels, individual electric motor drives which were loose on their base and in need of new brushes and other parts. There were bolts missing from the caps of boxes on some of the machines. Oil was dripping from overflowing oil cups of the overhead lines of shafting. The engine knocked; there were odors of overheated bearings, and much of the machinery was near



**Development in National-Erie Tubers**

Left: Machine Built in 1906 and Equipped with Open Spur Gear Drive, Operated as a Maximum 730 r.p.m.

Right: Modern Strainer, with Double Herringbone Gear Drive with Self-Aligning Type Roller Thrust Bearing.

the junk age. Special mention was made of the gears on certain of the machines, because by the state of the cogs of the gears the life and general operating condition of a machine may be determined. Gears for modern rubber machinery are of course cut, as the cast gear is almost a thing of the past, except for very large gears.

The gears on the machines in the plant in question had been made of steel, brass or fiber, properly milled, the teeth cut to the right pitch in each case, but had been in service so long that many of them rumbled and caused the machines to which they were attached to vibrate, all of which the expert noted and reported on.

The invested capital of a rubber factory consists as much of the power plant as of the machinery which it drives. In the balance sheet of every factory where the proper accounting is made, there will be found the item of depreciation of the power system, the manufacturing equipment and the buildings. Depreciation on the boilers and engines and machinery may run at about 5 per cent and on the buildings at about 3 per cent per year. In some factories this depreciation is deducted from the gross earnings and set aside under depreciation. In other factories the annual statements for the stockholders show this depreciation added to the surplus to give a grand total of undivided profits. Still other factory managements place the depreciation fund aside so that at the end of a certain time, when the buildings, the power plant and the machinery will need replacement, there will be capital available for the purpose.

Whichever way it is put, or cared for, depreciation in rubber factory properties is constant, and can be estimated on not only according to their wear and tear, but to their obsolescence. Much of the wear and tear can be taken care of by an efficient mechanical repair and replacement policy, and neither a boiler and engine, a water wheel or a machine need be thrown out because of this. The early discarding of any of this equipment usually is due to its obsolescence caused by the constant improvements in design and producing capacity of the later models. We will take the boiler room for an illustration.

### Obsolete or Overloaded Power Plants

The writer has been employed in a number of factories in recent years in which it was plainly evident that the producing capacity of the machinery was handicapped by a weak, overloaded, obsolete or poorly managed power plant. I recall working in a plant in New York State, in which power was obtained from a turbine propelled by a mountain stream.

Several pieces of heavy new machinery were added and the increased load was too much for the wheel to turn. All hands were turned out to clear the mountain stream of leaves and rubbish, during which time the factory was idle. The additional flow of water helped but little and the superintendent let matters run on, the speed irregular, the production low and faulty, until the company that installed the new machinery sent an expert to investigate. His report recommended what we all knew, except perhaps the superintendent, and he may have known, but did not want to spend the money, and that was to increase the power, which finally was done by installing a boiler and engine, because the water supply limit of force had been reached.

In another case which we recall, they operated a complement of machinery which was in fairly good running order and far from being old enough for junking. Yet it lacked the efficiency it should from the point of view of both quality and quantity production. There are certain rubber products that require evenness in the speed of the machinery to assure their proper stability and finish. Sometimes the speed in this particular plant was high and sometimes it was low.

It was seldom regular. It could not be depended upon.

There is such a thing as boiler management and firing of efficiency in the boiler room of a rubber plant, the same as in any works where steam is used for power.

As steam practice tends to higher pressures now, it is necessary that somewhat more science and art be used when firing boilers than when the speeds were not quite so high in the driven machinery. In one instance, in place of covering the grate bars with an even layer of coal from the bridge wall to near the furnace door, the man in charge of the boiler threw in the coal regardless of order, heaping it in places near the front, thus interfering with the draught and causing irregular combustion. There was a waste of fuel, waste of labor and an excess of clinkers and ash. The recording pressure gauge chart showed peaks and valleys throughout the days work, all of which was reflected in the unsatisfactory way in which the power was furnished to the machinery. Sometimes high, sometimes low, and seldom regular for any length of time.

After a time the factory property changed owners and the new management abandoned the hand shoveling method for firing the boiler for automatic stokers. The automatic stoker which was put into the plant in question happened to be of high efficiency. As soon as the change from hand stoking to mechanical was made, the peaks and the valleys that represented waste of coal and shifting pressures, disappeared from the recording pressure gauges on each of the boilers thus stoked.

The product of the factory increased in volume with the same number of machines running the same number of hours per day as before. Speed irregularities ceased much to the satisfaction of the operatives, for there is hardly anything so annoying to a machine tender as a jumpy speed.

We mention this instance of the boiler room because we know of several non-paying rubber factories which have been skipping their dividends lately by reason of a mechanical defect somewhere in their power or machinery sections preventing them from operating profitably. Some of these are losing enough money each year to pay for a complete new installation of the defective part which will give good service for several years.

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## World Trade in Reclaimed Rubber

COINCIDENT with the reduced consumption of crude rubber and the drop in prices for the raw commodity during 1930, there was a decided decrease in the trade in reclaimed rubber, according to the latest compilations of the Department of Commerce.

Export statistics for all the principal exporting countries for 1930 are not available at present, but from the figures at hand the decrease in exports as compared with 1929 seems to be around 25 per cent. Germany is the only country to show an increase in volume—and that was only slight. The United States continues to be the world's largest producer and exporter, maintaining the lead at a wide margin over its nearest competitor, the United Kingdom.

**World Exports of Reclaimed Rubber**

[Pounds]

| *Country* | 1925 | 1926 | 1927 | 1928 | 1929 | 1930 |
|---|---|---|---|---|---|---|
| United States .... | 10,239,876 | 12,075,640 | 19,130,429 | 22,452,956 | 27,707,161 | 21,209,510 |
| United Kingdom | 3,574,900 | 4,582,500 | 5,680,900 | 4,768,100 | 5,109,200 | [1]3,473,000 |
| Germany[2] .. | 865,070 | 3,879,040 | 1,958,254 | 3,071,054 | 1,335,183 | 1,345,762 |
| Italy ..... | 323,768 | 236,710 | 1,098,694 | 297,675 | 430,857 | 157,586 |
| Netherlands | 15,686 | 6,065 | 130 | 2,204 | 143,260 | 24,244 |
| Sweden[3] .... | 604 | 6,453 | 17,632 | 31,411 | 22,893 | ([4]) |
| Poland ..... | ..... | ..... | 3,306 | 3,306 | ([4]) | ([4]) |

[1]Estimated.
[2]Contains some soft rubber paste, but mostly reclaimed.
[3]Includes crude rubber, if any.
[4]Not available.

# *The* RUBBER INDUSTRY *of* FINLAND

## Has Steadily Expanded in All Lines Except Tires—Local Production Supplies Most of the Domestic Requirements and is Finding an Increasing Export Market

THE rubber manufacturing industry of Finland has shown a steady expansion within recent years and with the exception of automobile tires is already able to supply a good share of the domestic requirements and is finding an increasing market in the export fields, according to the *Finnish Trade Review.*

The oldest and at present still the largest Finnish rubber factory, Suomen Gummitehdas Oy, has been joined by two large and a number of smaller factories. The Kumiteollisuus Oy at Tampere and the Savio factory near Helsinki are both newcomers of some dimensions. The remaining factories are small enterprises, engaged chiefly in the manufacture of rubber heels. Altogether, the Finnish rubber industry gives employment to about 2,000 workers, of which about 1,200 at Suomen Gummitehdas, over 250 at the Kumiteollisuus Oy's works at Tampere, and approximately the same number at the Savio factory.

### Supplies Domestic Demand

The aggregate production in 1929 is estimated to have reached a value of about 125 million marks, a respectable sum if we take into account that production does not include the leading article in the rubber branch, viz., rubber motor-tires. Automobile tires are consequently the principal rubber article imported into the country, the annual imports being valued at 40 to 45 million marks. All other rubber goods, which the Finnish factories themselves supply, are only relatively modestly represented in the country's import statistics. The progress made by the home factories in recent years gives grounds for the assumption that the demand for such manufactures as rubber footwear, cycle tires and various technical equipment can be entirely met by home products.

The technical level of the Finnish rubber factories is already high enough to permit them to appear as competitors in the international market. Exports show a rapid development, particularly as regards last year and the year before, as will be seen from the following compilation (figures denote value in Finnish marks=2.5 cents U. S. Cy.)

**Finland's Export Trade in Rubber Goods**

| | (Jan.-Aug.) 1930 | 1929 | 1928 |
|---|---|---|---|
| Estonia | 1,494,215 | 4,157,222 | 3,319,485 |
| Latvia | 101,000 | 942,950 | 306,150 |
| Germany | 2,987,800 | 6,863,415 | 1,897,897 |
| Lithuania | 917,850 | 3,407,222 | 1,276,220 |
| Poland | 33,200 | 1,076,160 | 3,084,517 |
| Sweden | 3,101,321 | 1,898,083 | 1,731,143 |
| Other countries | 1,618,253 | 1,185,965 | 378,765 |
| Total exports | 10,253,639 | 19,531,017 | 11,994,097 |

The oldest rubber manufacturing enterprise in the country, the Suomen Gummitehdas Oy, has been represented already for some years in foreign markets, nevertheless it is only quite recently that this branch of industry can be said to have turned its attention in earnest to the possibilities held out by foreign markets. The search for new markets is naturally connected to some extent with the increasing competition in the branch. Increased production leads inevitably to a search for new outlets. The results hitherto achieved may be looked upon, therefore, chiefly as the fruits of attempts to feel the pulse of different markets, and as such they are indeed promising.

### Production Costs Low

Atmospherical conditions in Finland are so severe that they compel the use of first-class products only, capable of competition anywhere. Gradually, also, a measure of technical skill has been achieved that augurs well for a continued development. Further, as the rubber industry is still in great measure dependent on manual labor, Finland is in a relatively favourable position as regards production costs. Finnish workers are capable of turning out extremely high-class work. It is not surprising, therefore, that the prospects for an increased export trade are regarded within the industry as being considerably bright, despite the difficulties cast in the path of the industry by present economic conditions in Europe.

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## "Biddiblack"

A NEW and cheap carbonaceous pigment possessing reinforcing, pigmenting and other properties, which is being marketed under the trade name "Biddiblack," is obtained by a refining process from large deposits of a peculiar form of mineral black, found near Bideford, in Devonshire, England. The chief characteristic of the Bideford deposits is that the mineral black, in its natural state, is of a pasty form, unknown in other deposits throughout the world.

The deposits are being operated by Bideford Black, Ltd., with main sales offices at 110 Cannon Street, London, E. C. 4, England. A large treatment plant has been installed near Bideford, which gives a very finely ground finished product. Experiments have revealed that the reinforcing and pigmenting properties of the refined material are surprisingly good.

The refining process which the product undergoes is a fairly elaborate one, the steps in their order being wet grinding, classification, flotation, thickening, filtration, dry grinding and air separation.

# Reclaiming Uncured Tire Scrap by the Solvent-Extraction Process

## New Method Possesses Several Advantages Over Other Processes—Both the Cotton and Rubber are Completely Reclaimed Without Deterioration

THERE have been several methods devised within recent years for reclaiming uncured tire ply scrap, but the development along these lines, by which the uncured rubber and long staple cotton are ingeniously recovered without any deterioration was recently outlined in a paper delivered by Charles S. Powell, of the Firestone Tire and Rubber Company, at the Akron Group meeting of the Rubber Division, A. C. S., on February 9, 1931. The process was initiated by N. A. Shepard and later developed by F. W. Stavely and R. R. Jones, in collaboration with Mr. Powell.

The acid process which has long been used, has been complicated within recent years, by the use of very active acidic accelerators in compounding, necessitating a preliminary treatment with caustic to remove the accelerator so as to prevent the stock from curing during the acid treatment. Moreover, in the acid process of reclaiming the cotton is entirely disintegrated and lost.

The new method is an application of the familiar solvent-extraction process and resembles, in part, one of the processes used in reclaiming cured tire scrap.

The following description of the new process is from Mr. Powell's paper, as published in the June issue of *Industrial and Engineering Chemistry.*

The scrap and solvent are placed in a container and agitated. The rubber swells, goes into solution and the cement produced is drained off. The cotton must then be rinsed with fresh solvent to remove the rest of the rubber.

The difficulty in the process is in working out a safe, efficient method for removing the cotton from the cement.

After considerable experimentation and overcoming many difficulties it was deemed necessary to secure specially designed extraction equipment in order to carry out the process effectively.

### The Extraction Operation

The extraction plant is shown in the accompanying diagram. The extractor* is 5 feet in diameter and 12 feet long and contains a revolving cage, lined with 30-mesh wire screen (wire diameter 0.013 inches). This cage revolves at about 11 r.p.m. and is provided with doors for charging and discharging.

To operate the extractor, it is rotated until the doors are opposite the doors at the top of the outer shell. The cage is then loaded with 1,000 pounds of uncured tire ply scrap and both sets of doors are closed. The extractor is then filled with benzene through the charging line and the cage started rotating. At the end of about two hours the valve in the drain line is opened, with the cage still revolving, and the heavy cement is drained into the storage tank for heavy cement. The extractor is then filled again and washed for half an hour, and then drained as before. This second wash also goes to the heavy-cement tank. The next two washes are drained into the thin-cement tank and the last two washes go to the tank for very thin cement.

By this time the cotton, which contains less than one per cent of rubber, is quite white and clean. However, it contains about 300 gallons (1,134 liters) of benzene, which does not drain off. For that reason it is necessary to steam the cotton after each run and recover the solvent. To assist in vaporizing the benzene and to keep the temperature as low as possible, the system is provided with a vacuum pump. Steam at 50 pounds (3.51 kg. per sq. cm.) pressure is turned into the extractor through four nozzles at the bottom of the outer shell. The benzene is vaporized and passes over with the steam to the condensers, where they are both condensed and drawn to the vacuum pump, which in turn delivers them to the water separator. In the separator the water, being heavier than the benzene, settles to the bottom, where it is drawn off, while the benzene runs off the top into the pure-benzene tank. In filling the extractor, instead of using pure benzene, thin cement is used for the first four washes. For the last two washes it has been found necessary to preheat the benzene to 140° F. (60° C.) before washing the scrap. The use of hot washes speeds up the process considerably and helps in obtaining a cotton with a low rubber content.

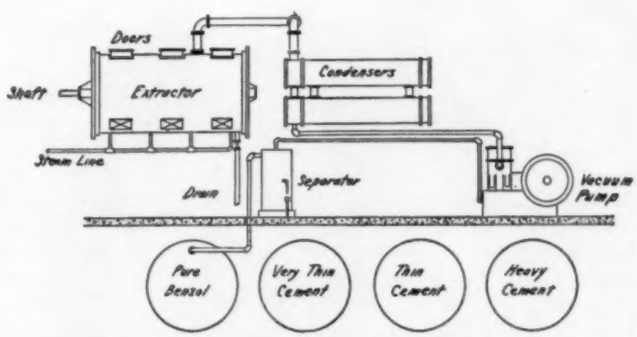



**Diagram of Apparatus for Solvent-Extraction of Uncured Tire Scrap**

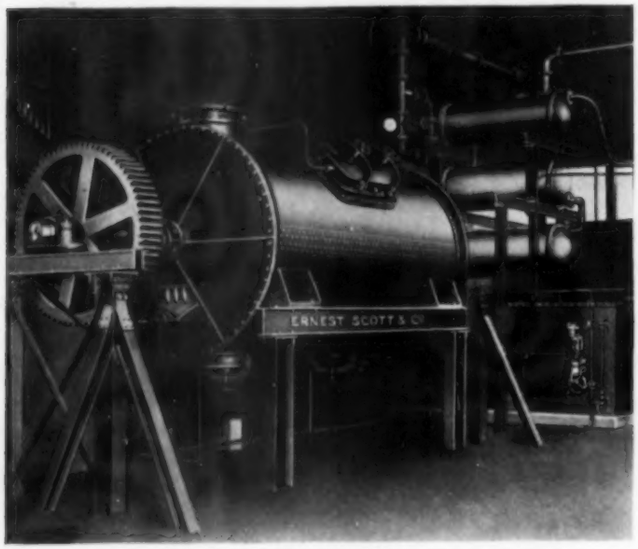
The cotton is removed through the lower doors of the extractor. It contains about 30 per cent moisture and must be dried before being used. This is done in large hot-air driers, such as are used for drying reclaimed rubber.

After the moisture had been removed from the cot-

*The equipment used was especially designed, constructed and installed, after a thorough study of the problem, by Ernest Scott and Company, Fall River, Mass., to whom much credit is due for the satisfactory operation of this new process.

ton, it was put through a shredder to remove any small knots and balls of fibers which had been formed.

Originally, the extractors were lined with a course cloth which was rather tightly woven. No difficulties were encountered during the first run, but during the second run it was impossible to drain the cement in a reasonable length of time. Apparently a thin film of rubber had cured on the inside of the cloth during the steaming process. The extractors were then lined with 8-ounce burlap. Much better results were obtained, and therefore on the next run the extractors were relined with 16-mesh galvanized screen, similar to window screening. The cotton came through this screen, contaminating the cement, and so a 30-mesh steel screen was substituted. This soon rusted and was replaced with one of monel metal. So far these screens have performed very satisfactorily.




**Type of Extractor Used in New Process**

The extractor used in the Firestone plant differs from this standard model in that there are three charging doors at the top and three discharging doors at the bottom, so that the discharge of the finished cotton residue is at the side instead of at the bottom, as shown in the view above.

When the extraction plant was first put into operation the length of time for steaming varied from 3 to 6 hours. This was an excessive length of time for the evaporation of 300 gallons (1,134 liters) of benzene. By the use of hot washes and wire screen lining instead of cloth, the average time of steaming was cut to about 60 minutes.

### Percentage of Products Reclaimed

The two products obtained during the extraction process from uncured tire ply scrap are cotton, containing about 0.5 per cent rubber, and a 6 per cent rubber cement in benzene. From 1,000 pounds (454 kg.) of scrap were obtained 1,200 gallons (4,536 liters) of cement and about 400 pounds (181 kg.) of cotton.

The first problem was to dispose of the rubber cement. A rubber cement of about the same composition as the cement obtained from the tire ply scrap, but with a higher rubber content, is used in the impregnation of fabric. The problem resolved itself into producing a heavier cement from the 6 per cent extracted cement. The original process called for a still, or evaporator, which would concentrate the cement to the required rubber content. However, this idea was abandoned when it was realized that in evaporating the rubber cement the thin film of rubber next to the heating surface would be cured, and also the low conductivity of the rubber cement itself would make evaporation very difficult. The concentration of the cement was therefore increased by adding fresh stock in the cement mixer.

### Economies of the Process

Aside from a small application in rubber compounding, the cotton may be utilized in paper manufacture and as a filler in cheap felt compositions. It may also be finely ground and used as cotton floc.

The actual cost of recovering the rubber and cotton by the extraction process is only 30 per cent of the cost of acid reclaiming. In addition the cotton is saved and can be sold, thus increasing the savings effected.

The cotton and rubber are both completely reclaimed without suffering any deterioration. In the other methods for reclaiming uncured ply scrap, either a depreciated product results (acid process) or an incomplete separation of the rubber and cotton may occur (washing process). The power consumption and the labor cost of extracting with solvent are both low.

There are several limitations to the extracting process, however. Scraps containing appreciable amounts of reclaim are unsuitable, because cement made from them cannot be used for fabric impregnation. Another difficulty is that it is not practical to mix scraps containing different accelerators, owing to the rapid set-up of the cement under the combined effect of certain accelerators. The process must therefore be operated on one kind of scrap at a time. In order economically to dispose of the cement produced, the extraction of the uncured scrap must operate in conjunction with fabric impregnation. In plants which do not do this the process would have limited applicability.

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## Rubber Tugboat Fenders

RUBBER fenders for tugboats, barges and pier-heads, built up from the treads of heavy truck tires, mechanically cut into various sized circular discs or oblong blocks, are the latest development of the Durable Mat Company, Seattle, Washington. The rubber blocks are forced upon soft galvanized steel rods. It is claimed that rubber fenders six inches thick, thus constructed, are more resilient and durable than fenders made of eighteen inch thickness of the finest manila rope.

**Tugboat "Creole." Picture Taken Two Years After Constant Use. Fender Shows No Wear**

The fenders are made in all sizes or to order and are well constructed to withstand the effects of hard shocks when "pushing" and "nosing" steamships into their berths or handling heavily laden barges. They are also effective as chafing mats on the face and corners of wood or concrete piers, landing piers or wherever a resilient shock-absorber is desirable in making landings.

# Rubber Export Association

VERY little has been written regarding one of the most active and worthy agencies within the rubber industry for the promotion of foreign business and co-operative effort in the rubber export trade, the Rubber Export Association.

It was originally formed, under the Webb-Pomerene Act, by an agreement between the Goodyear Tire and Rubber Export Company and the United States Rubber Export Company, Ltd., on October 25, 1922, with the object of promoting American export trade by close cooperation and exchange of information, thereby placing the members in a more favorable position to study and cope with foreign competition in the export markets of the world.

In December, 1923, The Miller Rubber Export Co., Ltd., Firestone Tire & Rubber Company and The Fisk Export Co., Inc., joined the Association, followed by The International B. F. Goodrich Corporation in January, 1924, the General Tire & Rubber Export Co. and the Kelly-Springfield Tire Export Co., Inc., in March, 1926, and the Lee Tire & Rubber Co. in June, 1928, making in all nine rubber companies.

Regular monthly meetings are held and are attended by two or more representatives of each of the member companies. A description of how effectively the Association functions was recently given by Charles E. Guest, vice-president and general manager of the United States Rubber Export Company, Ltd., in a paper read before the Eighteenth National Foreign Trade Convention. Mr. Guest said, in part, as follows:

"At the Association meetings we discuss in detail the existing conditions in each market, including foreign competition, prices, terms, adjustments, exchange and general policies.

### Operation of the Association

"Our methods of Association operation are not that we are any of us bound by a majority vote, but it is not infrequent that where the majority are in favor of taking action in some particular market, through discussion dissenting members are convinced and a unanimous agreement reached.

"While we frequently change prices either up or down, change trading terms, agree on points of distribution and reach agreements on various points, all members remain at liberty at all times to change prices or policies in any foreign market at any time, the only obligation being that in diverting from some point on which the Association members have previously agreed, we are to so notify the Association.

"As examples of our methods of operation, if price increases in any given market are deemed advisable, either on account of increased foreign tariffs or taxes, or by a decline in exchange, the matter is promptly cleared through our Association and an agreement reached. If foreign competition becomes so keen in any given market that a price change downward is deemed advisable, the same procedure is followed. If our foreign distributors in any part of the world sell at prices below those agreed upon, such matters are immediately cleared through the Association, so that the company member marketing their products through that particular distributor may use every effort to correct this situation avoiding a general unjustified price reduction. And so each and every problem which appears to be prejudicial to the foreign trade of the United States and to our respective companies is thrashed out either by mail, telegram or personal contact between the member companies of the Association or at the Association monthly meetings.

"In addition to these meetings, these companies frequently have either their general manager or assistant general manager out on trips to various countries, and on such trips, these men invariably hold local meetings with the foreign representatives of the companies interested in the Association with a view of studying competition and discussing ways and means for closer co-operation and the betterment of competitive conditions.

"The Rubber Export Association operates independently and has no affiliation with other associations. The workings of the Association, as authorized under the Webb-Pomerene Act, cover operations in foreign countries exclusively, and do not apply to such countries as Alaska, Hawaii, American Samoa, Guam, Midway Islands, Panama Canal Zone, Philippine Islands, Porto Rico, Virgin Islands, and such possessions of the United States are never referred to in any manner in the co-operation of our Association members.

"In conclusion, I will state that the work of the Association has been very constructive in every sense of the word, and has, undoubtedly, resulted in closer co-operation in the furtherance of the foreign trade of the United States, and the betterment of competition among American rubber manufacturers in foreign markets. This is due to the fact that through exchange of information we are familiar with the details of current conditions and competition and among ourselves are in a position to agree on any action that may seem necessary or advisable."

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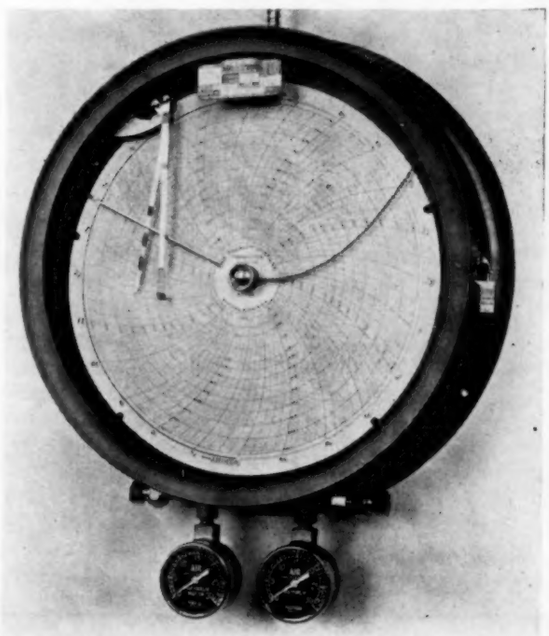
## Foxboro "Stabilog"

A NEW air-operated automatic controller, marketed under the trade name "Stabilog" is the latest development of the Foxboro Company, Foxboro, Mass. It is identical in appearance with other Foxboro controllers but differs radically in performance. The new



characteristics are a type of throttling range that recognizes the magnitude of change of condition and prevents "hunting" or overcontrolling and an automatic stabilizing effect that prevents the effect of the throttling range from changing the control point, thus permitting the instrument to recognize the rate of change of conditions and to compensate for them in the least possible time without overcontrolling or without sacrificing the accuracy of control.

The instrument can be installed and put into operation without complicated adjustments, and the control point may be changed as required with no other effort than setting the index.

# EDITORIAL COMMENT

## Deterioration in Rubber Goods

"NOTHING can stop the deterioration of rubber in a tennis ball." Such is the opening sentence in the advertisement of a leading sporting goods store in New York City. The statement is doubtlessly true but is not wholly fair to the fine quality of rubber goods now being offered to the public by the reputable concerns in the industry.

A few years ago, aging, rapid oxidation and the general deterioration in rubber goods was a serious problem. But today, with the ingenious development of various effective antioxidants and their use in compounding, the speed of deterioration in rubber goods is being greatly reduced. Good quality rubber articles of present day manufacture, provided they are properly storaged and handled, must almost approach the antique stage before they show signs of deterioration.

The statement in the advertisement objected to creates in the mind of the rubber goods consumer just the opposite impression from what the rubber manufacturing industry has been at pains to preach. The long life and service of good quality rubber goods has featured in every advertising campaign in the industry and statements like the above can hurt considerably the favorable impressions thus created.

It might be well for rubber manufacturers, possibly through their trade association, to watch such advertising on the part of their retail distributors so that such ill-advised statements will not be published.

## Ford and Rowe on Rubber's Future

IN THE face of all the pessimism engendered by the present distressing situation in the rubber industry, it is refreshing to hear a ringing note of optimism from Henry Ford, as to the future outlook. In his new book, "Moving Forward," Mr. Ford, who has on more than one occasion, proved to be considerable of a prophet, writes:

"In Brazil we are endeavouring to establish a rubber industry, and for a number of reasons. The world's use of rubber is bound to increase so rapidly that no source of rubber now existing will be able to supply even a small part of the demand. The world has not yet really begun to appreciate the value of rubber. It is the best silencer that we know, and one of these days we shall have to attack the problem of noise, for, aside from everything else, a large part of the noises with which we are afflicted comes from unnecessary jars. These shorten the life of all kinds of machinery. How long would an automobile last running on steel rims? Rubber must be produced in greater quantities and as a very cheap commodity."

At the moment it is hard to work up any great enthusiasm over the outlook and we are too near the situation to see the matter in its true perspective, but when we consider what happened in the growth of rubber consumption in the past 25 years, Mr. Ford's vision of the future may prove to be in no way exaggerated.

Another encouraging prophesy comes from J. W. F. Rowe, who has recently completed an interesting study of the rubber situation for the Royal Economic Society of London, in which he says:

"It is clear that the output of Dutch native rubber is being slightly reduced, while in all probability the Malayan small-holders are seriously over-tapping, and though their output may be maintained for many months yet, this will also be achieved at the expense of the future. Given a fairly drastic pruning of existing productive capacity, it also seems clear, that when the world depression passes, there will be something at least approaching a shortage, for world depressions do pass, and rubber is certainly a commodity for which the demand is expanding and will continue to expand."

## "Autocide" is the Word

FOR the past several months the National Safety Council has been conducting a "word-hunt" for a suitable synonym for the cumbersome term "motor vehicle fatalities." Hundreds of suggestions have been received, many of them more correct, etymologically, but none has had the popular appeal of the simple word "autocide."

Many newspapers and magazines are now using the word frequently as a synonym. It is especially welcome to headline writers.

We believe the word is just colorful enough to bring about a thoughtful, serious reaction on the part of readers to the devastating toll of needless slaughter on our highways.

Good tires can contribute a great part in such safety efforts. The campaign of the Silvertown Safety League is already showing good results in this connection.

The RUBBER AGE

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*Representatives in all the rubber centers of the United States, Canada, England, France, Germany and the Middle East.*

# The Rubber Industry's CURRENT NEWS

Financial—Personals—New Rubber Products—
Building Operations—Manufacturing—Exports

## TIRE SALES NOT LIKELY TO EXCEED 1930 FIGURE

Despite the May increase in tire production in the rubber factories of Akron and other centres, a survey of the rubber industry released May 28 by the Standard Statistics Company, New York City, predicts that the 1931 tire sales of the country will not exceed the 1930 aggregate sales of about 54,000,000 tires. The survey is based on original equipment demand, replacement sales and manufacturers' and dealers' inventories.

"Production of tires was increased around May 1," the report states, "apparently in anticipation of larger demand during the summer months. Currently, there is no tangible evidence that sales have gained sufficiently to warrant extended operations at the higher levels now prevailing. Original equipment demand remains substantially below last year; it is likewise improbable that replacement sales have increased in any material degree."

The report concludes that renewal volume for 1931 may attain a level of some 38,000,000 to 40,000,000 units and that only the most favorably situated companies are likely to show even moderate profits. Crude rubber prices, it says, will for some time show more weakness than strength.

### Offers Heavy Cresols

A Hungarian firm is seeking American rubber manufacturing companies which might be able to use heavy cresols from low temperature tar, which is absolutely free of hydrocarbons. Any domestic rubber company interested in this material will be put in touch with the firm in question by communicating with Dr. Emeric de Benke, secretary, American Hungarian Chamber of Commerce, 35 West 33rd Street, New York City.

### Miller Leads Safety Contest

The Miller Rubber Company is leading the B. F. Goodrich Company divisional safety contest for the first half of 1931 with a cumulative improvement in accident prevention of 72.56 per cent over last year. Other divisions showing marked improvements are engineering, 70.46; mechanical, 70.44; tires, 67.17; and processing, 51.86.

### Fabric Fire Hose Moves Office

The Fabric Fire Hose Company has moved its sales offices to its factory at Sandy Hook, Conn. These offices were formerly located at 9 Park Place, New York City. The company is a subsidiary of the United States Rubber Company.

### New Tire Table Issued

The National Rubber Machinery Company, Akron, O., has just issued a new tire table of balloon tires and the cars that use them for the five years from 1927 to 1931. The list was compiled as of April 1, 1931, and is complete and up-to-date in the data given.

### Scrap Rubber Freight Rates

Illinois Freight Association Docket 6137 proposes a reduction in the rate on scrap rubber, minimum weight 30,000 pounds, from Centralia, Ill., to East St. Louis, Ill., from 13½ cents to 9½ cents per 100 pounds.

### Aetna Preferred Dividend

The Aetna Rubber Company, Ashtabula, O., has declared the regular dividend of $1.75 a share on its preferred stock. This will be paid July 1 to stockholders of record at the close of business on June 15.

### Boston Woven Hose Dividends

The Boston Woven Hose & Rubber Company has declared the regular quarterly dividend of $1.50 on the common stock and the regularly semi-annual dividend of $3 on the preferred stock. Both will be paid June 15 to stock of record as of the close of business on June 1 .

### Form Rubber Water Toy Firm

The Kelley Rubber Company, with headquarters at 333 Park Street, Akron, O., was incorporated late last month for the purpose of manufacturing bathers' buoys for swimming aids and seashore sport. Plans for expanding present plant operations, which now employ 17 workers, are under way. The firm was capitalized with 1,000 shares of no-par common stock, with John G. Rowley, Kenneth A. Mason and H. E. Martin as incorporators.

T. H. FREEMAN has been appointed purchasing agent of the Security Mills, Newton, Mass. He was for several years a member of the textile buying staff of the Hood Rubber Company, Watertown, Mass.

## PLAN FIRST EXPOSITION OF MATERIALS HANDLING

The first National Exposition of Mechanical Handling will be held at Grand Central Palace, New York City, from November 30 to December 5. The exposition will be conducted under the same management as the National Exposition of Power and Mechanical Engineering, the International Heating and Ventilating Exposition, and the Chemical Industries Exposition, all of which are under the management of the International Exposition Company.

Special sections devoted to mechancal handling equipment have been successfully exhibited as part of the other shows mentioned, and exhibitors have urged that a separate and exclusive display in this field be offered. Large and heavy installations will be accommodated on the main floor, while conveyor systems, cranes, tramways and other overhead equipment, requiring spacious area and considerable height can be installed and operated in the large court of the main and mezzanine floors.

## U. S. RUBBER TAKES STEPS TO END MISHAWAKA STRIKE

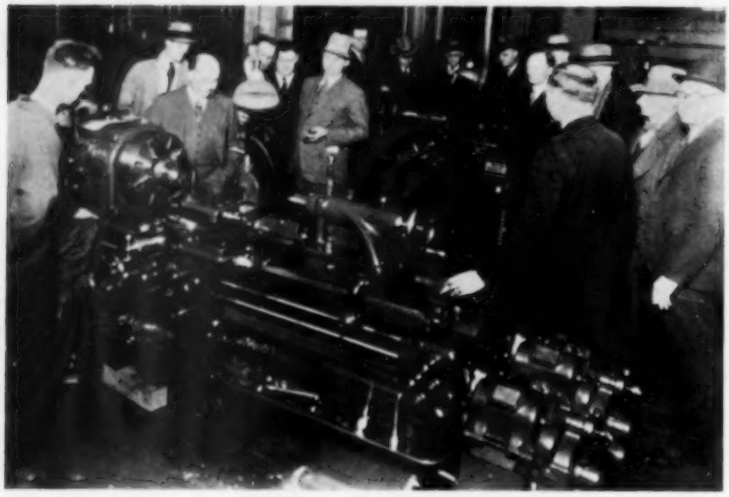
The United States Rubber Company has stepped in to end the strike of 2,500 workers at the plant of its subsidiary, the Mishawaka Rubber & Woolen Company, Mishawaka, Ind. The parent company will assume management of the factory and will enforce a higher wage scale as soon as the strike ends, it was stated.

Forty employes walked out of the factory on May 14 and the others joined the strike on May 18, drawing picket lines around the plant. The chief point of contention was the institution of a bonus system which the workers declared to be unfair and discriminatory.

### Raybestos Prize Contest

Through dealer trade papers, the Raybestos Division of Raybestos-Manhattan, Bridgeport, Conn., is offering $1,500 in prizes for the best name submitted for its molded brake lining and for letters describing the advantages of this type of lining. The first prize for the best name is $500, and there are prizes of $250, $150 and $100 for the best letters and $5 each for the hundred next best letters, the contest closing July 1. The company's molded lining is manufactured by the Manhattan Rubber Manufacturing Division at Passaic, N. J.

## Production of Rubber Mold Shown in Exhibit



DEMONSTRATIONS of the Monarch Model "C" Tool Room Lathes and the Monarch-Keller Form Turning Machine have been held in recent weeks by the Monarch Machine Tool Company, Sidney, O., in Cleveland, Syracuse, Boston, Detroit and other cities so that those interested might have an opportunity to see these machine in operation. A final demonstration is being held at the Monarch company's new branch at 547 West Washington Boulevard, Chicago, Ill., from June 8 to 13.

The group shown above is watching the Cleveland exhibition recently held at the showroom of Strong, Carlisle & Hammond Company, where 152 visitors registered, representing 55 concerns. This group is watching the Monarch-Keller Form Turning Machine produce a rubber mold in 45 minutes—a job that originally required four hours machining time.

## LESS PAY, SHORTER HOURS, PREDICTED BY FIRESTONE

That shorter working hours and smaller wages are likely to be the permanent result of business readjustments now going on is the opinion of Harvey S. Firestone, president of the Firestone Tire & Rubber Company, expressed in newspaper interviews last month at Columbus, O. Mr. Firestone emphasized his belief that general wage reductions were to be expected, but declared that violent disagreement between capital and labor on wages would be unwise, possibly serious, since it would tend to retard the rehabilitation of industry.

"I am confident that, whatever the method, shorter working hours will be one permanent result of the changes now taking place in the business structure," he said. "Of course, shorter hours are forced right now. But I think this will be permanent in a general way."

An immediate arbitrary reduction in wages in all lines would hurt rather than help the general business situation, he said. "It should come slowly and naturally along with the readjustment taking place in other lines," Mr. Firestone concluded.

## United Shoe Machinery Profit

The report of the United Shoe Machinery Corporation for the year ended February 28, 1931, shows net profit of $8,351,598 after federal taxes, equivalent after preferred dividends to $3.31 a share (par $25) on 2,329,589 shares of common stock. This compares with $9,670,923, or $3.87 a common share, in the preceding fiscal year.

## *Andrew H. Noah*

Andrew Hale Noah, one of the pioneers of the old Diamond Rubber Company and a director of the B. F. Goodrich Company until his retirement last fall, died at his home in Akron on May 30 at 73 years of age. He was widely known in Akron for his activities in several businesses and for his philanthropic work.

Born on a Summit County farm on February 18, 1858, Mr. Noah completed his education at Oberlin College, for which he later underwrote the cost of a residence hall and a library. Coming to Akron in 1885 after five years as a salesman, Mr. Noah engaged in the real estate and insurance brokerage business and in 1886 aided in founding the Akron Building & Loan Association, acting as its secretary for many years.

In 1899 he joined O. C. Barber in the Diamond Rubber Company and served actively as general manager and treasurer of that organization until its merger with the B. F. Goodrich Company in March, 1912. He built up the Clemmer-Noah Construction Company to a leading position in Akron and was chairman of its board of directors at the time of his death. He was also a director of the Bruner-Goodhue-Cooke-Cranz Agency, Akron, O., and a trustee of Oberlin College.

He is survived by his widow, son and brother. Pallbearers at the services on June 1 were George F. Oenslager, chemist of the B. F. Goodrich Company; Hugh A. Galt, vice-president and manager of the Columbia Chemical Company; Clarence I. Bruner, president of the Akron Savings & Loan Company; L. M. Latta, J. B. Looker and Harry E. Andress.

## DORR CO. MERGES WITH OLIVER UNITED FILTERS

John Van Nostrand Dorr and Edwin Letts Oliver announced on June 1 a union of businesses and assets of the Dorr Company and Oliver United Filters, Inc. A new company, to be known as the Dorr-Oliver Corporation, has been formed under the joint management of Messrs. Dorr and Oliver and will function through two wholly-owned operating units, a new Dorr Company, Inc., and a new Oliver United Filters, Inc.

The Dorr Company occupies a leading position in the fields of agitation, classification and sedimentation through its equipment, and Oliver United Filters, Inc., occupies a similar position in the field of filtration. The Dorr Company manufactures various types of industrial equipment lined with rubber by the Vulcalock process, under which they are licensees of the B. F. Goodrich Company. Oliver United Filters, Inc., has produced filtering equipment for reclaimed rubber plants, making installations for the Goodyear Tire & Rubber Company, the Philadelphia Rubber Works Company and the Midwest Rubber Reclaiming Company.

## RUBBER STOCKS ADVANCE WITH TURN OF MARKET

Stocks of the leading rubber manufacturing companies advanced with the rest of the market in the sudden bullish movement of June 3 and 4. Previously several had dropped to new lows for the year of 1931 or longer in sympathy with the general course of securities on all principal markets.

New low levels were reached during the fortnight by Goodyear common and preferred, United States Rubber common and preferred, Firestone preferred, Goodrich common, and several of the smaller companies. Seiberling maintained its recent advance with the preferred closing at its peak for the year and the common only slightly under its highest level.

Closing prices of shares of the principal rubber manufacturing companies, compared to the close on May 20 and to the high and low thus far in 1931, were as follows:

| | Last Price | | —1931— | |
|---|---|---|---|---|
| | June 4 | May 20 | High | Low |
| Aetna | — | — | 5 | 3¾ |
| Ajax | — | — | ½ | ¼ |
| American Hard Rubber | — | — | 35¼ | 30 |
| Dayton "A" | — | — | — | — |
| Falls | — | — | — | — |
| Faultless | — | — | 37 | 35 |
| Firestone | 17 | 16 | 19¾ | 13 |
| do. 6% pfd. | 59½ | — | 63 | 56¼ |
| Fisk | ½ | ½ | ⅞ | ½ |
| do. 1st pfd. | 1½ | 1 | 3 | 1 |
| General | — | 25 | 140 | 81 |
| do. pfd. | — | — | 87½ | 83 |
| Goodrich | 10⅜ | 11 | 20⅞ | 8¼ |
| do. pfd. | — | 36 | 68 | 35 |
| Goodyear | 36⅜ | 37¼ | 52¾ | 30⅝ |
| do. 1st pfd. | — | 78¼ | 91 | 71 |
| India | — | — | 13½ | 8¾ |
| Intercontinental | — | 2 | 4½ | 1¾ |
| Kelly-Springfield | 1½ | 1⅞ | 3½ | 1⅜ |
| do. 6% pfd. | — | — | 45 | 35 |
| Lee | — | 3 | 4¾ | 2¼ |
| Mohawk | 3¼ | — | 8 | 3 |
| do. pfd. | — | — | 35 | 25 |
| Norwalk | — | — | 1½ | ½ |
| Pirelli | — | 31½ | 39¾ | 31 |
| Raybestos-Manhattan | 20⅛ | 21½ | 29½ | 17½ |
| Seiberling | 9 | 8½ | 10½ | 4⅝ |
| do. pfd. | 50 | — | 50 | 32 |
| U. S. Rubber | 12¼ | 12⅝ | 20⅜ | 10⅛ |
| do. pfd. | 21 | 22½ | 36¼ | 17 |

# Rubber News Around the World

## DUTCH RUBBER GROWERS SEEK MORE STATISTICS

The Council of the International Association for Rubber and Other Cultivations in the Netherlands Indies, in its report to the Dutch Colonial Minister, comments on the statistics compiled every quarter by the Department of Agriculture in the Netherlands East Indies concerning native rubber cultivation there. It is suggested that these statistics could appear more regularly with more complete and up-to-date figures, the Council recommending as questions which might be discussed the following:

1. Is the rubber kept in store by the native planters, or by native or Chinese dealers?
2. What price has the native rubber planter received for his product, at the end of each of the three report months, at the chief town or port that may be regarded as characteristic for the district in question?
3. What percentage of the produced rubber is obtained in the various districts by means of hired labor, and what conditions prevail in that regard?
4. In what compass and for what reasons is the rubber tapping stopped?
5. Is there new rubber being planted, and if so to what extent?
6. What are in general the labor conditions in the various districts where rubber is planted?
7. What is in general the condition of the bark of the rubber trees that have reached the productive stage, and in what degree do they suffer from disease?
8. Are the plantations subject to damage in any significant measure by fire or by animal foes?
9. What is the condition of the cultivation of food crops in the various districts in question?

## RUBBER CHEMISTS MEET AT PARIS CONFERENCE

Rubber chemists and technologists from several countries were scheduled to gather on June 10 at Paris for a Rubber Congress under the auspices of the Syndicat du Caoutchouc. Sessions will continue until June 13, with a total of 28 papers to be presented by leading French, German, English and American rubber technologists. The conference is being held during the French Colonial Exhibition and will give visiting rubber men a chance to inspect that exhibit.

Groups of chemists from the Institution of the Rubber Industry and the German Rubber Society have made plans to attend the congress. W. B. Wiegand, of the Binney & Smith Company, will present a paper on "Volatile Matter in Carbon Black," while other papers will be given by such well known rubber men as E. A. Hauser, Paul Bary, Colin Macbeth, Paul Stamberger, D. F. Twiss and Eric Macfayden.

## Ceylon Reduces Rubber Duty

The Ceylon government has reduced the export duty on crude rubber 1½ cents a pound, according to cable reports. This is equivalent to a little over a half-cent in terms of United States currency. Shipments which have been held in anticipation of a reduction were only moderate, it is reported.

## FOOTWEAR IMPORTS INTO GERMANY NEAR $4,000,000

In 1930 total rubber footwear imports into Germany amounted to 718,982 pairs of rubber shoes valued at $1,115,238, 1,142,861 pairs of overshoes of a value of $1,621,666, and 1,000,595 pairs of other shoes of cloth or felt with soles of other materials of a total value of $1,350,952. The latter item included canvas shoes with rubber soles, of which nearly 900,000 pairs were imported. Around 54,000 pairs of silk shoes for ladies were also included in this item.

Imports of all rubber footwear into Germany last year, therefore, had a total value of nearly $4,000,000. The United States was the most important source of supply with $1,719,524, followed by Sweden with $478,333, Soviet Russia with $454,762, Latvia with $392143, Czechoslovakia with $296,905, Denmark with $148,571, Canada with $138,571, Finland with $99,285 and Great Britain with $77,381. In the case of some countries these figures include certain quantities of silk and other cloth shoes included in German statistics in the same item as canvas shoes.

The average value of the rubber shoes imported into Germany last year was $1.55 per pair, that of the overshoes was $1.42 per pair, and that of the other shoes of cloth or felt with soles of other materials was $1.35 per pair.

## Exchange Stays Open Saturdays

Some members of the Rubber Exchange of New York recently petitioned the board of governors for the privilege of voting on a proposal to close the exchange to trading on Saturdays during June, July, August and September. After full consideration the board has respectfully refused the request, holding that inasmuch as the foreign rubber markets remain open on Saturdays, traders should not be denied the opportunity to trade in exchange contracts here.

# United States Holds Lead in World Rubber Glove Trade

THE United States has steadily developed an export trade in all classes of rubber gloves and has now won first place among the exporting nations. In 1930 American manufacturers sent 124,941 dozen pairs valued at $333,683 to as many as 70 different foreign markets. Exports ranged from one dozen pairs, valued at $12, to Bolivia, to 47,542 dozen pairs, valued at $112,081 to the United Kingdom. The United States principal competitors are, in general, Germany, France, the United Kingdom, and Japan. Although gloves are produced in Canada, Italy, Austria, and a few of the other rubber manufacturing countries, these nations have not as yet become serious competitors.

### *Varieties of Rubber Gloves*

The class of rubber gloves comprises several different varieties. There is the expensive surgeon's glove, usually made of the best rubber, and the American-made article is in particular demand. A less expensive surgeon's glove selling for arouond $0.25 or less per pair is manufactured and sold especially for housewives. Price is the first consideration in this variety, and Germany and Japan, which can undersell the American-made article, offer the United States the most keen competition. The third class of glove is a very heavy, coarse glove for use in mechanics, electricians, acid users, and other laborers. United States glove manufacturers cater to this class, and are increasing their participation in export trade each year.

### *United Kingdom the Leading Market*

The American-made rubber glove is particularly popular in the United Kingdom, and outsells all foreign competitors and the domestic product, despite its higher price. The principal rival of United States exporters, besides the domestic manufacturers, are the German, Danish, and to a certain extent the French. The left and right hand surgeon's gloves are preferred to the interchangeable one. There is an increasing demand for women's rubber gloves for household and garden use, which are usually sold in the 6-pence stores.

The United States is recognized for its quality-made gloves, and the nations with a high per capita wealth are our best outlets. The United Kingdom is our most important market, by a wide margin, and at the same time is our most formidable competitor for quality goods. Argentina is the United States' second best market, but inasmuch as Argentina has only a limited manufacture of gloves, it takes the higher-priced article as well as the cheaper grades. Canada—also a quality market—appears in third place. Cuba, Sweden, and Uruguay follow in order, and Italy and Germany, both manufacturers, are also important markets.

# Names in the News

DR. G. STAFFORD WHITBY, professor of chemistry at McGill University, will present a paper on "The Structure of Rubber and Other Elastic Colloids" at the Ninth Annual Colloid Symposium of the American Chemical Society to be held at Ohio State University, Columbus, O., from June 11 to 13. J. W. WILLIAMS will read a paper on "The Colloid Chemistry of Electrical Insulating Materials."

GEORGE OENSLAGER, of the B. F. Goodrich Company, will speak on "Developments in Rubber Technology" on July 2 in connection with the summer school of the Society for the Promotion of Engineering Education at the University of Michigan, Ann Arbor, Mich. The complete chemical engineering session will extend from June 22 to July 9 and will be followed by a Conference on Chemical Engineering Education under the sponsorship of the American Institute of Chemical Engineers.

DR. W. F. ZIMMERLI, of the Roessler & Hasslacher Chemical Company, was elected a councilor of the Western New York Section of the American Chemical Society at its meeting last month. Dr. Zimmerli, who has done considerable work in rubber chemistry, joined the R & H organization in October, 1928, taking a place in the rubber service division in Ohio, and was transferred in September, 1930, to Niagara Falls, N. Y., as head of the commercial development department. Earlier in his career he was associated with the Howe Rubber Corporation, New Brunswick, N. J., and the B. F. Goodrich Company, Akron, O.

H. L. PETTINGELL has been elected vice-president in charge of merchandising of the Lee Tire & Rubber Company of New York, Inc., and E. W. MCCREERY has been named sales manager. Mr. Pettingell joined the Lee sales organization in 1912 after having been assistant sales manager of the Ajax Rubber Company since 1910. Mr. McCreery served 16 years with the B. F. Goodrich Company, five years with the Mason Tire & Rubber Company and six years with the Kelly-Springfield Tire Company before recently joining Lee.

J. C. MCQUISTON, general advertising manager of the Westinghouse Electric & Manufacturing Company, retired from that position on June 1.

W. C. STATE, consulting engineer for the Goodyear Tire & Rubber Company, was presented with a plaque and with a motion picture outfit on May 20 in recognition of his 30 years of service to the company.

SIR WALROND SINCLAIR, managing director of the British Goodrich Rubber Company, Ltd., and his son ALAN left New York for England on June 1 after a three-week visit to the United States. Sir Walrond arrived on the S. S. Baltic last month in company with T. B. TOMPKINSON, comptroller of the B. F. Goodrich Company. During his stay, he attended a series of meetings in New York held by the International B. F. Goodrich Company.

C. H. CARLISLE, president of the Goodyear Tire & Rubber Company of Canada, Ltd., has returned to his office at Toronto. He spent most of last month recovering from an illness at the Mississippi Fish Club lodge near Deuxrivieres, Que.

J. T. KIDNEY, of the safety department of the Goodyear Tire & Rubber Company was in charge of a special program arranged for the May 28 meeting of the Foremen's Club of the Mansfield Tire & Rubber Company, Mansfield, O. An illustrated talk on the construction of the dirigible Akron was given.

GEORGE M. MOFFETT, director and member of the executive committee of the B. F. Goodrich Company, has been elected president of the Corn Products Refining Company to succeed the late E. T. BEDFORD.

HARRY E. BLYTHE, assistant to the president of the Goodyear Tire & Rubber Company predicted an early upturn in business in a talk before the members of the Canton and Eastern Ohio Association of Purchasing Agents on May 20 at the Shady Hollow Country Club, Massillon, O.

G. A. WADDLE, assistant sales manager of the Goodyear Tire & Rubber Company, and WARD T. VAN ORMAN, Goodyear balloonist, spoke at a joint meeting of the Akron Association of Purchasing Agents with members of the Cleveland association on May 19 at the Goodyear dining room in Akron. G. E. PRICE, assistant purchasing agent of Goodyear and president of the Akron association, presided at the meeting.

CHARLES BELKNAP, president of the Merrimac Chemical Company, was elected executive vice-president of the Monsanto Chemical Works at the May 26 meeting of the board of directors. His duties will remain as heretofore, except that he will act for Monsanto in the absence of the president. WILLIAM M. RAND, vice-president of the Merrimac Chemical Company, was elected a director of Monsanto. He succeeds PHILIP STOCKTON, who continues, however, as a director of the Merrimac company, Monsanto's New England subsidiary.

F. J. ANDRE, president of the Telling-Belle Vernon Company, a subsidiary of the National Dairy Products Company, has been elected a director of the India Tire & Rubber Company. He succeeds to the place held by the late A. T. KINGSBURY, who had served on the board since the organization of the company in 1916.

P. W. BARKER, assistant chief of the Rubber Division, Bureau of Foreign and Domestic Commerce, spent May 28 in Akron in conference with executives and export managers of the several rubber plants there.

H. E. COOK, general superintendent of engineering at the B. F. Goodrich Company, is the author of an article on plant maintenance appearing in the current issue of *Management*. In his article, he takes issue with the common practice of postponing general plant repair projects until production is at low levels, advocating a steady program of maintenance regardless of production.

MERTON A. TURNER, vice-president and sales manager of the Stedman Rubber Flooring Company, South Braintree, Mass., has been elected chairman of the rubber flooring manufacturers' division of the Rubber Manufacturers' Association. He was formerly vice-chairman of that division.

J. T. KENNEDY, of the manufacturers' sales department, will represent the B. F. Goodrich Company at the annual summer meeting of the Society of Automotive Engineers at White Sulphur Springs, W. Va., from June 14 to 19.

RAY SAILEY, who was in charge of the hose department of the Murray Rubber Company, Trenton, N. J., for a number of years, is now affiliated with a similar department of the Thermoid Rubber Company in the same city.

C. EDWARD MURRAY, JR., formerly president of the Murray Rubber Company, Trenton, N. J., has become associated with the Crescent Insulated Wire & Cable Company. His father, GENERAL C. EDWARD MURRAY, is president of that organization, and his brother, J. CORNELL MURRAY, is treasurer.

P. W. LITCHFIELD, president of the Goodyear Tire & Rubber Company, spoke on June 4 at a luncheon meeting at the Mayflower Hotel, Akron, O., in connection with the national convention of the Society of Electrical Maintenance Engineers. Mr. Litchfield discussed the dirigible Akron, and the convention delegates were later taken through the Goodyear-Zeppelin hangar to inspect the new airship.

ELMER E. WAY has been appointed advertising manager of the Taylor Instrument Company, Rochester, N. Y., to succeed FAYETTE M. HERRICK, who resigned recently owing to ill health.

W. L. BRUNBRY, assistant purchasing agent of the Firestone Footwear Company, Hudson, Mass., has been appointed purchasing agent to succeed W. C. MCDERMOTT, who was assigned to other duties at the Firestone Tire & Rubber Company in Akron.

H. W. KERRO has been placed in charge of the new branch sales office of the C. J. Tagliabue Manufacturing Company in Detroit, Mich. His headquarters will be at 2832 East Grand Boulevard in that city.

CLIFFTON C. SLUSSER, vice-president and factory manager of the Goodyear Tire & Rubber Company, discussed his recent South American trip at a meeting of the Akron Kiwanis Club on June 4.

W. A. HAZLETT, eastern division sales manager of the Goodyear Tire & Rubber Company, was given a 25-year service pin and C. A. STILLMAN, vice-president of the company, was given a 10-year service pin on June 3. Mr. Hazlett started at Goodyear as stenographer after his graduation from Mount Union College in 1906. He has served in various capacities from salesman to branch manager and has had his present position for 13 years.

JAMES GRANTHAM, director of the research department of the United States Rubber Plantations, has been elected a Fellow of the Institution of the Rubber Industry. Among the ordinary members recently elected from American branch factories are I. E. EDMONDSON, of the British Goodrich Rubber Company; J. H. ALDRED, A. M. JONES, and G. A. WILLIAMSON, of the Firestone Tyre & Rubber Company; and H. M. BUTCHER, H. F. FELLER, R. McC. HANNAH, A. HUGHES, D. LIVINGSTON, K. L. MENUEZ and L. W. NEILSON, of the India Tyre & Rubber Company.

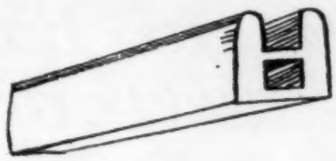
LEROY C. PIERSON, formerly general manager of the Kelly-Springfield Tire Company branch at Albany, N. Y., has been transferred to Syracuse, N. Y., where he will have jurisdiction of sales throughout all of New York State, except the metropolitan area of New York City. The company has designated Syracuse as its centre of distribution for its products in the state, but the Albany and Buffalo units will be retained as auxiliary distributing warehouses.

PAUL R. MAHONY, executive vice-president of the International B. F. Goodrich Company, returned to Akron on June 2 from a 36,000-mile trip through the Orient, middle eastern countries, India and Europe. On his return, he declared that other countries seemed to be facing the future with confidence and courage but the United States appeared to be the seat of the world-wide business depression because of its faulty psychology.

C. L. LUKEMAN has been named district manager by the Firestone Tire & Rubber Company for the Indianapolis territory after several years in charge of the Louiville district. He succeeds C. E. WARREN, who has been promoted to the staff of L. R. Jackson, vice-president of the company. Both men have been with the organization for 12 years.

ROBERT COWEN, factory manager of the Appleton Rubber Company, Franklin, Mass., spoke last month before the members of the Rotary Club of North Attleboro, Mass., on the general subject of rubber production and manufacturing.

# New Rubber Goods

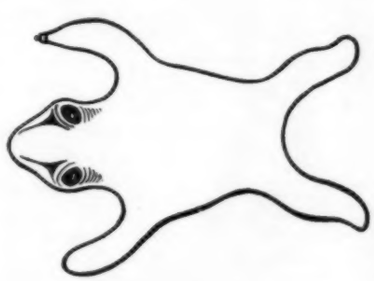


## Tite-Grip Window Channel

The Bickett Rubber Products Corporation, which is now moving its factory from Watertown, Wis., to Anderson, Ind., has developed a new rubber window channel under the name of Tite-Grip. The new product is especially adapted for use on motor vehicles and is constructed to receive a movable glass panel and provide a substantially weather-proof contact. The parallel side walls are relatively thick and connected along one of the longitudinal edges with an intermediate wall of approximately the same thickness as the first transverse wall. The intermediate wall is located approximately midway between the longitudinal edges of the side walls so as to form a closed chamber and an opening groove. The groove receives the edges of a glass panel and as the panel contacts with the intermediate wall, the flexibility of this wall causes the edges of the side walls to grip the glass. This window channeling can be made in any shape or size.

## Miller Frog Water Toy

To answer a rather consistent demand, the Miller Rubber Products Company, Inc., Akron, O., subsidiary of the B. F. Goodrich Company, is now offering beach and pool float toys to the trade. Made in the shape



of a frog, this float is colored a bright green. When inflated, it will float adults and can be used as a swimming aid. It is made entirely of heavy rubber and has no bladder. Easily inflated, it is adaptable both for children and for adults. Other sport-floats in the Miller line are the alligator water toy in green and white rubber and the turtle water toy in red rubber.

## Desmo Inspection Lamp

An inspection lamp possessing several attractive features and selling at 10s 6d has become one of the best selling items in the line of Desmo, Ltd., Stafford Street, Birmingham, England. One of its principal features is that it is provided with special rubber buffer rings with the object of preventing it from scratching paint or fabric. It also has two folding hooks which support it either in an upright or inverted position, while a rubber suction cone is fitted to the end of the handle by which it can be attached to any smooth, flat surface. It is supplied with either a twin plug or lamp adapter fitting together, with a neat metal case in which it can be carried without damage.

## Munsingwear Waterwear Suit

The Munsingwear Corporation, Minneapolis, Minn., has entered the bathing suit field with a new line under the name of Waterwear. The Suntop model for women has an elastic bodice top which permits the straps to be worn off the shoulders, an elastic skirt hem and elastic bands on the legs. The company claims the rubber compound used can not be injured by salt water or sunshine.

## Flexible Typewriter Platen

The Ames Supply Company, 564 West Randolph Street, Chicago, Ill., and the U. S. Typewriter Parts & Supplies Company, 6 Murray Street, New York City, are distributing a new soft rubber typewriter platen covering that is being manufactured by a leading eastern rubber company. The primary feature of the new platen is its toughness. It is sufficiently soft to permit clean type impressions without subjecting the rib-

bon to undue wear. Conversely, it is sufficiently hard to lend itself to manifold copy work and stencil cutting. Tests made by one of the distributors are said to have shown that the new soft rubber platen produced more and clearer cut carbon copies than hard platens and at the same time increased the life of the ribbons used by 700 per cent.

# Current Crude Rubber Items

## INDENTURED LABOR BAN DOES NOT AFFECT RUBBER

Newspaper reports published late last month to the effect that imports of crude rubber into the United States might be largely barred as a result of a ban on products of indentured labor unded penal sanction have been denied by members of the Tariff Commission. Rubber produced on plantations in the Dutch East Indies were mentioned as being particularly liable to come under the provisions of the ban.

The suggestion that imports to the value of nearly $700,000,000, including crude rubber, might be affected by the forced labor clause of the Hawley-Smoot tariff act was immediately denied by Secretary of State Stimson and Thomas Walker Page, vice-chairman of the Tariff Commission. Attention was called to the addition to the act of new clause that specifically states, "The provisions of this act shall not apply to those products not produced or manufactured in the United States in sufficient quantities to meet American needs."

## EXCHANGE DIFFERENTIALS ESTABLISHED FOR JUNE

The adjustment committee of the Rubber Exchange of New York on May 25 fixed the price differentials between the various grades of Hevea plantation rubber which shall prevail on all deliveries against the new "A" contracts for the month of June as follows: No. 2 crepe (thick or thin) at 10 points; No. 2 ribbed smoked sheets at 12 points; No. 3 ribbed smoked sheets at 28 points; No. 4 ribbed smoked sheets at 43 points; No. 5 ribbed smoked sheets at 68 points; limit of allowance on No. 2 crepe at 25 points; and allowance on rubber delivered in bales at 13 points.

On May 15 the adjustment committee fixed the price differentials for June against the old "A" contracts as follows: off quality first latex crepe at one-tenth of a cent a pound; ordinary F. A. Q. ribbed smoked sheets at four-tenths of a cent a pound; and good F. A. Q. ribbed smoked sheets at twenty-five one-hundredths of a cent a pound.

## Mitsui in Empire State

Mitsui & Company, Ltd., importers of crude rubber and other commodities, moved its offices into the Empire State Building, Fifth avenue and 34th street, New York City. The firm formerly maintained its departments for rubber, burlap, hemp and other commodities at 65 Broadway and its silk department at 180 Madison avenue. These will be combined in offices that will occupy almost the whole seventh floor of the Empire State Building, or about 21,000 square feet. The firm's tea department will remain at 101 Front Street, and the Mitsui Bank will continue at 61 Broadway.

# *Hay Asks Estate Restriction; Wright to Head Growers' Ass'n*

SPEAKING at the anual meeting of the Rubber Growers' Association, Inc., at London on May 14, J. G. Hay, the retiring chairman, again urged rubber plantations to adopt a voluntary restriction of output to counterbalance the reckless tapping of native gardens. Mr. Hay discussed the failure of producers of other commodities to keep prices up by any type of control and declared, therefore, that the association "could not seriously entertain the application of restriction measures except on the condition that practically the whole plantation industry came within any scheme for the regulation of output."

The extent of the fall of rubber prices between April, 1929, and March, 1931, was 63 per cent, he said, as compared to 68 per cent for coffee, 50 per cent for gasoline and copper, 47 per cent for wheat, 45 per cent for cotton, 40 per cent for tin, 39 per cent for tea, and 27 per cent for sugar. "We escape by just one place the melancholy distinction of showing the steepest fall," he commented.

### *New Uses for Rubber*

One of the most important sections of Mr. Hay's speech dealt with new applications developed for rubber and liquid latex. "The important problem of extending the uses of rubber—and thus assisting in bringing about an equilibrium between production and consumption—has been energetically dealt with by the Propaganda Committee. The multiplicity of the uses of rubber and the fact that it enters as a principal or an accessory into almost every branch of industry has added to the immensity of the task and has necessitated concentration in certain well-defined directions.

"The following may be mentioned as an indication of the directions in which definite progress has been made, and which offer prospects of still further development:

"Engineering, Mining and Automobile Industries—The use of rubber for the protection of wearing surfaces and the insulation of running machinery. For example, one of the largest automobile manufacturers claims that whereas four years ago the weight of rubber apart from tires used in their cars was approximately 10 to 15 pounds, it is now 60 pounds.

"Railways—A report will be widely distributed shortly by the Propaganda Department dealing with the use of rubber in rolling stock. The potentialities of increased consumption of rubber on railways is very great.

"Textile Industry—Certain important organizations are carrying out investigations into the use of rubber and latex. A large number of grants of latex have been made by the association for experimental work.

"Rubber Upholstery—There has been a successful development of various forms of this material, for example, sponge, pneumatic and hair impregnated with latex.

"Rubber Footwear—The Propaganda Department has contributed largely to the development of vulcanized rubber footwear and crepe rubber sole.

"Rubber Flooring—In rubber flooring the industry has possibly one of the biggest potential outlets for its raw commodity. Success has recently been achieved with the manufacture, by a modified process, of a new type of rubber flooring which is cheaper, can be stocked in rolls by retail shops, and is available in large quantities as an article of domestic use.

### *Technical Research Is Aided*

"Closely akin to propaganda is technical research. While it is admitted that manufacturers in their own interests are constantly investigating improved processes and the commercial possibilities of new uses, it can be fairly claimed that the only organized effort to do this promoted and conducted in the interests of the rubber producing industry is the work carried out by this association and Rubber Roadways, Ltd.

"It is satisfactory to state that the Federated Malay States government has approved a recommendation from the Advisory Board that £100,000 might properly be set aside to finance such schemes of experimental research and propaganda work as might be approved by the Advisory Board of the Rubber Experimental Research and Propaganda Fund."

### *Wright is Elected Chairman*

The members of the association elected as their new chairman for the ensuing year Sir Herbert Wright, who has been a member of the Council of the organization since 1913. He exercises control, either as chairman or director, over a large group of rubber planting companies. His first experience with rubber dates back to the time when as a member of the Ceylon Agricultural Department he opened and developed the first government experiment station in the British colonies. It was for his work for the Imperial College of Science and Technology at South Kensington that he had the honor of knighthood conferred on him last year.

## Brazilian Rubber Exemption

Following the decree of the Brazilian government exempting imports for the rubber industry from duty, President Getulio Vargas received a telegram from Henry Ford in praise of the action. "Such a step will help immensely in the development of the Amazon Valley," Mr. Ford said.

## UNITED CARBON COMPANY NOW IN GOOD POSITION

Current statements show the United Carbon Company to be in a sound financial position so that promising development or expansion need not be postponed, according to Oscar Nelson, president, in a report to stockholders. "It is the company's intention," Mr. Nelson says, "to preserve its position through the present conditions and be prepared for future advantages."

Appraisal is now being made of all the properties of the United Carbon Company. This appraisal has now been completed upon the company's eastern Kentucky gas property and the gas contract thereon, and this one property, only partially developed, is given a value by the appraising engineer of an amount equal to all of the company's outstanding common stock at the present market price.

Profit for the company for the quarter ended March 31 was $22,257 before taxes as against $28,157 in the last quarter of 1930 and $263,000 in the first quarter of last year. The semi-annual dividend of $3.50 on the 7 per cent non-cumulative preferred stock has been omitted to conserve cash for the drilling program in the Kentucky field in connection with the contract with the Columbia Gas & Electric Company.

Hunter S. Marston has been elected a director and Charles A. Cushing a member of the executive committee, giving the Bancamerica-Blair Corporation representation in the management.

## N. Y. Belting & Packing Moves

The New York Belting & Packing Company, manufacturer of mechanical rubber goods, has moved its headquarters from 91 Chambers Street, New York City, to its factory at Passaic, N. J. A company announcement states that the move was made in the interest of more efficient operation. The company is also closing its several branches and will hereafter confine its activities to the solicitation of jobber business.

## Balloon To Be Arctic Guide

A captive balloon made by the Goodyear Tire & Rubber Company will be the aerial buoy which will lead Dr. Hugo Eckener in the Graf Zeppelin to his rendezvous with Sir Hubert Wilkins, submarine explorer, somewhere near the North Pole this summer. Dr. Karl Arnstein, vice-president of the Goodyear-Zeppelin Corporation, says a 12-foot bag,similar to those sold for advertising purposes, is to be shipped to the Wilkins-Ellsworth expedition. The balloon, with a lift of about 35 pounds, will rise from the submarine to guide the dirigible.

## Open New Akron Hotel

The newly completed Mayflower Hotel at Akron, O., was formally opened on May 18 with appropriate ceremonies. During the dedication exercises flowers were dropped upon the roof of the hotel from small dirigibles in the fleet of the Goodyear Tire & Rubber Company and from airplanes. Several prominent leaders in the Akron rubber industry are understood to have been interested in the promotion of plans for the new hotel.

## April Golf Ball Imports

Imports of golf balls into the United States during April numbered 153,709, valued at $47,722, all of which with the exception of 25 balls with a value of $13 were brought in from the United Kingdom. The total marks the highest month's imports since last September. The unit value per ball was 31 cents as compared to 31.2 cents per ball in March and 30.6 cents per ball in February.

## Receiver Sues L. E. Shunk

Charges that L. Earl Shunk and Harry C. Davis, associated in the management of the defunct Shunk Rubber Company, paid themselves excessive salaries are outlined in a suit for accounting filed May 19 by Attorney Stanley Denlinger, receiver for the firm since March 1. From November 19, 1926, to October, 1927, the two officials paid themselves salaries totaling $43,000 although the company made a profit of only $2,288 in that period, Mr. Denlinger says. The petition places the total received by the two over a five-year period at $63,000 and asks an accounting and determination by the court what Mr. Shunk and Mr. Davis should have received for their services and the making available for creditors of any balance. Mr. Shunk now heads L. E. Shunk Latex Products, Inc.

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# LATE MARKET PRICES

## RUBBER—COTTONS AND FABRICS—CHEMICALS

NEW YORK, JUNE 4, 1931

## Crude

DURING the month of May the average of the daily closing prices on the New York outside market was 6.49 cents a pound for ribbed smoked sheets. This marks a slight advance from the average of 6.43 cents recorded in April and compares with 14.24 cents in May, 1930.

Prices quoted on the New York outside market at the close June 4 follow:

***Plantations—***

| | | | |
|---|---|---|---|
| Ribbed Smoked Sheets— | | | |
| Spot-June | .06⅝ | @ | .06½ |
| July-Sept. | .06⅝ | @ | — |
| Oct.-Dec. | .06¾ | @ | .06⅞ |
| First Latex, crepe spot | .06½ | @ | .06⅝ |
| Amber Crepe, No. 2 | .06¼ | @ | .06⅜ |
| Amber Crepe, No. 3 | .06⅛ | @ | .06¼ |
| Amber Crepe, No. 4 | — | @ | .06⅛ |
| Brown Crepe, Clean thin | .06 | @ | .06¼ |
| Brown Crepe, specky | .05⅞ | @ | .06 |
| Liquid Latex, per gal. | .75 | @ | .85 |

***Paras—***

| | | | |
|---|---|---|---|
| Up-river, fine | .08⅛ | @ | .08¼ |
| Up-river, coarse | .06 | @ | .06½ |
| Acre Bolivian, fine | .08⅝ | @ | .08½ |
| Caucho Ball, Upper | .06 | @ | .06½ |

***Centrals—***

| | | | |
|---|---|---|---|
| Central scrap | .06 | @ | — |
| Esmeraldas | .06 | @ | — |

***Balata—***

| | | | |
|---|---|---|---|
| Block, Ciudad | .31 | @ | .31½ |

### LONDON MARKET

**Standard Ribbed Smoked Sheets—Buyers**

| | | | |
|---|---|---|---|
| Spot-June | — | @ | 3d |
| July-Sept. | 3 | @ | 3 1/16d |
| Oct.-Dec. | — | @ | 3 1/16d |

### SINGAPORE MARKET

**Standard Ribbed Smoked Sheets—Sellers**

| | | | |
|---|---|---|---|
| Spot | — | @ | 2 3/16d |

The table below indicates the daily closing prices and sales on the Rubber Exchange of New York:

| | | Spot | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | Sales |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **No. 1 Standard Contract of 10 Tons** | | | | | | | | | | | | | | | |
| May | 19 | 6.80 | 6.88 | 6.97 | 7.06 | 7.15 | 7.21 | 7.28 | 7.37 | 7.45 | 7.53 | 7.60 | 7.68 | —— | 271 |
| | 20 | 6.60 | 6.68 | 6.77 | 6.87 | 6.97 | 7.05 | 7.12 | 7.20 | 7.24 | 7.31 | 7.39 | 7.47 | —— | 90 |
| | 21 | 6.60 | 6.66 | 6.75 | 6.85 | 6.94 | 7.02 | 7.09 | 7.17 | 7.21 | 7.28 | 7.37 | 7.44 | —— | 86 |
| | 22 | 6.70 | 6.74 | 6.83 | 6.93 | 7.04 | 7.11 | 7.17 | 7.24 | 7.30 | 7.37 | 7.43 | 7.50 | —— | 36 |
| | 23 | 6.70 | 6.73 | 6.80 | 6.90 | 7.01 | 7.07 | 7.13 | 7.20 | 7.26 | 7.33 | 7.40 | 7.47 | —— | —— |
| | 25 | 6.50 | 6.63 | 6.72 | 6.81 | 6.90 | 6.97 | 7.03 | 7.10 | 7.18 | 7.25 | 7.32 | 7.40 | —— | 3 |
| | 26 | 6.50 | 6.55 | 6.55 | 6.65 | 6.74 | 6.81 | 6.86 | 6.92 | 6.99 | 7.07 | 7.15 | 7.23 | —— | 74 |
| | 27 | 6.40 | 6.35 | 6.46 | 6.53 | 6.60 | 6.67 | 6.74 | 6.81 | 6.88 | 6.95 | 7.02 | 7.10 | —— | 42 |
| | 28 | 6.40 | 6.38 | 6.48 | 6.55 | 6.62 | 6.69 | 6.76 | 6.83 | 6.91 | 6.98 | 7.05 | 7.13 | —— | 28 |
| | 29 | 6.50 | 6.38 | 6.48 | 6.55 | 6.62 | 6.70 | 6.78 | 6.86 | 6.94 | 7.01 | 7.08 | 7.16 | —— | 49 |
| June | 1 | 6.33 | 6.25 | 6.36 | 6.43 | 6.50 | 6.58 | 6.65 | 6.72 | 6.79 | 6.86 | 6.93 | 7.01 | 7.10 | 39 |
| | 2 | 6.30 | 6.25 | 6.33 | 6.40 | 6.47 | 6.55 | 6.62 | 6.69 | 6.76 | 6.82 | 6.88 | 6.99 | 7.10 | 76 |
| | 3 | 6.30 | 6.15 | 6.30 | 6.38 | 6.45 | 6.52 | 6.59 | 6.66 | 6.74 | 6.80 | 6.87 | 6.97 | 7.07 | 52 |
| | 4 | 6.40 | 6.33 | 6.48 | 6.56 | 6.65 | 6.72 | 6.80 | 6.86 | 6.94 | 7.01 | 7.08 | 7.18 | 7.28 | 36 |
| **Old "A" Contract of 2½ Tons** | | | | | | | | | | | | | | | |
| May | 19 | —— | 6.80 | 6.90 | 7.00 | 7.00 | 7.10 | 7.20 | 7.30 | 7.43* | 7.51* | 7.58* | 7.66* | —— | 7 |
| | 20 | —— | 6.60 | 6.70 | 6.70 | 6.80 | 6.90 | 7.00 | 7.10 | 7.22* | 7.29* | 7.37* | 7.45* | —— | 1 |
| | 21 | —— | 6.60 | 6.70 | 6.70 | 6.80 | 6.90 | 7.00 | 7.10 | 7.19* | 7.26* | 7.35* | 7.42* | —— | 20 |
| | 22 | —— | 6.70 | 6.80 | 6.80 | 6.90 | 7.00 | 7.10 | 7.20 | 7.28* | 7.35* | 7.41* | 7.48* | —— | 8 |
| | 23 | —— | 6.60 | 6.80 | 6.80 | 6.90 | 7.00 | 7.10 | 7.20 | 7.24* | 7.31* | 7.38* | 7.45* | —— | 4 |
| | 25 | —— | 6.50 | 6.60 | 6.70 | 6.80 | 6.80 | 6.90 | 7.00 | 7.16* | 7.23* | 7.30* | 7.38* | —— | 10 |
| | 26 | —— | 6.40 | 6.40 | 6.60 | 6.60 | 6.70 | 6.80 | 6.90 | 6.97* | 7.05* | 7.13* | 7.21* | —— | 27 |
| | 27 | —— | 6.30 | 6.30 | 6.40 | 6.50 | 6.60 | 6.70 | 6.80 | 6.86* | 6.93* | 7.00* | 7.08* | —— | 15 |
| | 28 | —— | 6.30 | 6.40 | 6.50 | 6.60 | 6.60 | 6.70 | 6.80 | 6.89* | 6.96* | 7.03* | 7.11* | —— | 33 |
| | 29 | —— | 6.30 | 6.40 | 6.50 | 6.60 | 6.60 | 6.70 | 6.80 | 6.92* | 6.99* | 7.06* | 7.14* | —— | —— |
| June | 1 | —— | 6.20 | 6.30 | 6.40 | 6.50 | 6.50 | 6.60 | 6.70 | 6.77* | 6.84* | 6.91* | 6.99* | 7.08* | 13 |
| | 2 | —— | 6.20 | 6.30 | 6.40 | 6.40 | 6.50 | 6.60 | 6.60 | 6.74* | 6.80* | 6.86* | 6.97* | 7.08* | 44 |
| | 3 | —— | 6.10 | 6.20 | 6.30 | 6.40 | 6.50 | 6.60 | 6.60 | 6.72* | 6.78* | 6.85* | 6.95* | 7.05* | 20 |
| | 4 | —— | 6.30 | 6.40 | 6.50 | 6.60 | 6.70 | 6.80 | 6.80 | 6.92* | 6.99* | 7.06* | 7.16* | 7.26* | 6 |

*New "A" Contract

## Reclaimed

The proportion of reclaim to crude rubber being used by the industry continues to hold up well, despite the low prices for the raw commodity. May reclaim consumption was appreciably higher than any previous month this year. Late prices follow:

***High Tensile***

| | | | | |
|---|---|---|---|---|
| Super-Reclaim Black | lb. | .06¾ | @ | .07 |
| High Tensile Red | lb. | .06½ | @ | .06¾ |

***Shoe***

| | | | | |
|---|---|---|---|---|
| Unwashed | lb. | .05¾ | @ | .06 |
| Washed | lb. | .07½ | @ | .07¾ |

***Tube***

| | | | | |
|---|---|---|---|---|
| No. 1 (Floating) | lb. | .08 | @ | .08¼ |
| No. 2 (Compounded) | lb. | .06¾ | @ | .07 |

***Tires***

| | | | | |
|---|---|---|---|---|
| Black | lb. | .05¼ | @ | .05½ |
| Black, selected tires | lb. | .05½ | @ | .05¾ |
| Dark Gray | lb. | .06¾ | @ | .07 |
| Light Gray | lb. | .07 | @ | .07¼ |
| White | lb. | .07½ | @ | .07¾ |
| Truck, Heavy Gravity | lb. | .06 | @ | .06¼ |
| Truck, Light Gravity | lb. | .06¼ | @ | .06⅜ |

***Miscellaneous***

| | | | | |
|---|---|---|---|---|
| Mechanical blends | lb. | .04½ | @ | .05 |

## Scrap

Demand from reclaiming plants showed a noticeable gain during the past fortnight, indicating that increased operations at tire factories is having its effect upon the scrap rubber market. Current quotations for the various grades of scrap are as follows:

**(Prices to Consumer)**

| | | | | |
|---|---|---|---|---|
| Auto tire peelings | ton | 20.00 | @ | 21.50 |
| Mixed auto | ton | 9.50 | @ | 10.50 |
| Bicycle tires | ton | 7.00 | @ | 8.00 |
| Clean solid truck tires | ton | 26.50 | @ | 27.00 |
| Boots and shoes | cwt. | 1.10 | @ | 1.20 |
| Arctics, untrimmed | cwt. | .75 | @ | .80 |
| Inner tubes, No. 1 | lb. | .04¼ | @ | .04½ |
| Inner tubes, No. 2, compounded | lb. | .02⅛ | @ | .02¼ |
| Inner Tubes, Red | lb. | .01⅞ | @ | .02 |
| Air Brake Hose | ton | 9.00 | @ | 10.00 |
| Rubber Hose | ton | 8.50 | @ | 9.00 |

## Cotton

DURING the month of May the average of the daily closing prices for middling upland cotton at New York was 9.38 cents a pound. This marks a decline to a record low level for many years and compares with 10.19 cents in April and with 16.43 cents in May of last year. The commodity is currently selling well below the May average and may strike a still lower figure for the month of June. Current business conditions and stock market action are swaying cotton prices as much as crop news.

The high, low and closing prices on the New York Cotton Exchange on June 4 were as follows:

| | High | Low | Close | Close |
|---|---|---|---|---|
| | | June 4 | | May 29 |
| July | 8.79 | 8.49 | 8.73 | 9.30 |
| Oct. | 9.15 | 8.85 | 9.11 | 9.62 |
| Dec. | 9.38 | 9.08 | 9.35 | — |

## Tire Fabrics

Some mills have reported gains in orders during the past fortnight, while tire company textile plants continue to operate near capacity. Late price quotations for the various grades of tire fabric follow:

**(Prices Net at the Mill)**

**CORD**

| | | | | |
|---|---|---|---|---|
| Peeler, carded, 23/4/3 | lb. | .27½ | @ | .28 |
| Peeler, carded, 23/5/3 | lb. | .26½ | @ | .27 |
| Peeler, carded, 13/3/3 | lb. | .24 | @ | .24½ |
| Peeler, carded, 15/3/3 | lb. | .24½ | @ | .25 |
| Egyptian, carded, 23/5/3 | lb. | .37 | @ | .38 |
| Egyptian, combed, 23/5/3 | lb. | .40½ | @ | .41 |

**CHAFERS**

| | | | | |
|---|---|---|---|---|
| Carded, American, 8 oz. | lb. | .23½ | @ | .24 |
| Carded, American, 10 oz. | lb. | .23½ | @ | .24 |
| Carded, American 12 oz. | lb. | .23 | @ | .23½ |
| Carded, American, 14 oz. | lb. | .21 | @ | .21½ |

**LENO BREAKER**

| | | | | |
|---|---|---|---|---|
| Carded, American, 8¼ oz. | lb. | .22 | @ | .26 |
| Carded, American, 10¼ oz. | lb. | .22 | @ | .26 |

**SQUARE WOVEN**

| | | | | |
|---|---|---|---|---|
| Carded, American, 17¼ oz. 23-11 ply | lb. | .27½ | @ | .28 |
| Carded, American, 17¼ oz. 10-ply | lb. | 21 | @ | .21½ |

## Sheetings

General decreases were the rule in the sheetings market during the two weeks just ended. The latest price quotations for the popular sizes were as follows:

| | | | | |
|---|---|---|---|---|
| 40-inch, 2.50-yard | yd. | .06⅝ | @ | .06¾ |
| 40-inch, 2.85-yard | yd. | .05½ | @ | .05¾ |
| 40-inch, 3.15-yard | yd. | — | @ | .07¼ |
| 40-inch, 3.60-yard | yd. | — | @ | .06 |
| 40-inch, 3.75-yard | yd. | .04¾ | @ | .04⅞ |
| 40-inch, 4.25-yard | yd. | — | @ | .04⅝ |

## Ducks

Hose and belting ducks and enameling ducks were lower at the close of the period, but other grades held more firmly. The market was weak, with closing prices as follows:

| | | | | |
|---|---|---|---|---|
| Belting and Hose | lb. | .21¼ | @ | .23 |
| Enameling | lb. | .19½ | @ | .20 |
| Single filling | lb. | — | @ | .10 |
| Double filling | lb. | .11 | @ | .11⅛ |

# CHEMICALS

THE month of May was appreciably better in respect to demand for rubber chemicals and compounding ingredients than any month since the spring of 1930. Increases in the rate of tire factory schedules resulted in a substantial gain in the consumption of carbon black, reducing stocks of that compounding ingredient for the first time in many months. Suppliers of the better known accelerators and antioxidants found orders increasing. The price structure for rubber chemicals has remained without change in the fortnight.

## ACCELERATORS

| | | | |
|---|---|---|---|
| **Organic** | | | |
| A-1 | lb. | .24 @ | .27 |
| A-5-10 | lb. | .33 @ | .36 |
| A-7 | lb. | .55 @ | .59 |
| A-11 | lb. | .62 @ | .66 |
| A-16 | lb. | .57 @ | .61 |
| A-19 | lb. | .58 @ | .62 |
| A-20 | lb. | .64 @ | .68 |
| A-32 | lb. | .80 @ | .95 |
| Aldehyde ammonia, crystals | lb. | .65 @ | .70 |
| Altax | lb. | | |
| Aniline oil, drums, f.o.b. works | lb. | .14½@ | .16 |
| Captax | lb | | |
| Crylene | lb. | .55 @ | .65 |
| paste | lb. | .45 @ | .55 |
| Di-Ortho-Tolyguanidine | lb. | .42 @ | .44½ |
| Diphenylguanidine | lb. | .30 @ | .32½ |
| Ethylidene aniline | lb. | .45 @ | .47½ |
| Formaldehyde aniline | lb. | .37½@ | .40 |
| Heptene | lb. | .40 @ | — |
| Hexamethylene-tetramine | lb. | .58½@ | .61 |
| Lithex | lb. | .18 @ | .20 |
| Methylenedianiline | lb. | .37½@ | .40 |
| Monex | lb. | 3.25 @ | — |
| Oxynone | lb. | .68 @ | .80 |
| Phenex | lb. | .75 @ | — |
| Pipsol | lb. | 4.30 @ | 4.50 |
| R & H 40 | lb. | .40 @ | .42½ |
| R & H 50 | lb. | .40 @ | .42½ |
| R & H 397 | lb. | .75 @ | .77½ |
| R-2 | lb. | 1.95 @ | 2.15 |
| Safex | lb. | 1.20 @ | 1.25 |
| SPDX | lb. | .75 @ | — |
| Super-Sulphur No. 1 | lb. | | |
| No. 2 | lb. | | |
| Tensilac, No. 39 | lb. | .40 @ | .42½ |
| Tensilac, No. 41 | lb. | .50 @ | .52½ |
| Thermio F | lb. | .50 @ | .55 |
| Thiocarbanilid, drums | lb. | .21 @ | .23 |
| TMTT | lb. | 3.00 @ | 3.25 |
| Trimene | lb. | .75 @ | — |
| base | lb. | 1.20 @ | — |
| Triphenylguanidine | lb. | .58 @ | .60 |
| Tuads | lb. | | |
| Ureka | lb. | .75 @ | 1.00 |
| Vulcanex | lb. | | |
| Vulcone | lb. | | |
| Vulcanol | lb. | | |
| Z-88-P | lb. | .50 @ | .60 |
| Zimate | lb. | | |
| **Inorganic** | | | |
| Lead, sublimed blue | lb. | .08¼@ | — |
| Lead, white | lb. | .08½@ | .08¾ |
| Litharge, domestic | lb. | .07¾@ | — |
| Magnesia, calcined, light | per 100 lb. | 5.35 @ | 5.45 |
| heavy | per 100 lb. | 3.65 @ | 3.75 |

## COLORS

| | | | |
|---|---|---|---|
| **Blacks (See Compounding Materials)** | | | |
| **Blues** | | | |
| Prussian | lb. | .35 @ | .36 |
| Ultramarine | lb. | .06 @ | .32 |
| **Browns** | | | |
| Sienna, Italian | lb. | .05½@ | .12½ |
| Umber, Turkey | lb. | .04½@ | .07 |
| **Greens** | | | |
| Chrome, light | lb. | .30 @ | .32 |
| medium | lb. | .31 @ | .33 |
| dark | lb. | .34 @ | .36 |
| Chromium Oxide, bbl. | lb. | .34½@ | .35½ |
| **Reds** | | | |
| Antimony crimson, 15/17 | lb. | .40 @ | .44 |
| sulfur, free | lb. | .56 @ | .66 |
| golden, 15/17 F.S. | lb. | .20 @ | .25 |
| Indian English | lb. | .08 @ | .11 |
| Domestic (Maroon) | lb. | .11 @ | — |
| Oximony | lb. | .13¼@ | — |
| Red oxide, pure | lb. | .10 @ | .12 |
| Smith's 444 Crimson f.o.b. Springfield | lb. | .08¾@ | .10 |
| Rub-Er-Red, f.o.b. Easton | lb. | .08¾@ | — |
| Venetian red | lb. | .08 @ | .06 |
| Vermillion, quicksilver, English | lb. | 1.75 @ | 1.80 |
| **Whites** | | | |
| Lithopone, Akeolith | lb. | .05 3/5@ | .06 |
| Lithopone, Albalith | lb. | .05¼@ | .05¾ |
| Lithopone, Azolith | lb. | .05¼@ | .05¾ |
| Lithopone, Vanolith | lb. | .05¾@ | — |
| Titanium oxide | lb. | .21 @ | — |
| Titanox B, f.o.b. St. Louis, | lb. | .06½@ | .07 |
| Titanox C, f.o.b. St. Louis, | lb. | .07 @ | .07½ |
| **Zinc Oxide—American Process** | | | |
| American Azo: ZZZ (lead free) | lb. | .06½@ | .07 |
| ZZ (leaded) | lb. | .06⅝@ | .06⅞ |
| Horsehead Brand: Special | lb. | .07 @ | .07½ |
| XX Green | lb. | .07 @ | .07½ |
| XX Red, lead free | lb. | .06½@ | .07 |
| Kadox, black label | lb. | .10⅜@ | .10⅞ |
| blue label | lb. | .09⅜@ | .09⅞ |
| red label | lb. | .08 @ | .08½ |
| St. Joe, black label | lb. | .06½@ | .07 |
| red label | lb. | .06½@ | .07 |
| **Zinc Oxide—French Process** | | | |
| Anaconda, lead free | lb. | .06½@ | .07 |
| Anaconda, selected lead free | lb. | .07 @ | .07½ |
| White seal | lb. | .11⅝@ | .11⅞ |
| Green seal | lb. | .10⅜@ | .10⅞ |
| Red seal | lb. | .09⅝@ | .09⅞ |
| **Yellows** | | | |
| Chrome | lb. | .16½@ | .17 |
| Ocher, French medium | lb. | .02 @ | .03 |
| domestic | lb. | .01⅝@ | .02 |

## COMPOUNDING MATERIALS

| | | | |
|---|---|---|---|
| Aluminum Flake | ton | 21.85 @ | 24.50 |
| Ammonia carbonate, lump | lb. | .10½@ | .12 |
| Asbestine | ton | 14.75 @ | 18.00 |
| Barium carbonate | lb. | .03½@ | .05 |
| Barium Dust | lb. | .05 @ | .06 |
| Barytes southern off-color | ton | 12.00 @ | 18.00 |
| Western prime white | ton | 23.00 @ | — |
| imported | ton | 27.00 @ | 36.00 |
| Basofor | lb. | .04½@ | — |
| Bentonite | lb. | .02 @ | .03 |
| **Blacks** | | | |
| Arrow "Aerofloted" | lb. | .03½@ | .08½ |
| Bone Black | lb. | .06 @ | .12½ |
| Carbon, compressed | lb. | .03 @ | .07 |
| Carbon, uncompressed | lb. | .03 @ | .07 |
| Disperso, f.o.b. Louisiana | lb. | .03½@ | — |
| Disperso, f.o.b. Texas | lb. | .036 @ | — |
| Drop Black | lb. | .06 @ | .14 |
| Fumonex | lb. | .03½@ | .07½ |
| Excello, compressed | lb. | .04 @ | .08 |
| Gastex, f.o.b. Texas | lb. | .03 @ | .06 |
| Lamp Black | lb. | .10 @ | .40 |
| Micronex | lb. | .03½@ | .08½ |
| Thermatomic-Thermax | lb. | | |
| Flex | lb. | | |
| P-33 | lb. | | |
| United carbon, fob Tex. | lb. | .03½@ | .08½ |
| Velvetex carbon | lb. | .03 @ | .06 |
| Blanc fixe dry f.o.b. works | ton | 75.00 @ | 90.00 |
| Carrara filler | lb. | .01¾@ | .02 |
| Catalpo (fact.) | lb. | .02 @ | — |
| Clay, Kaolin, domestic | ton | 8.00 @ | 9.00 |
| Aerfloted, Suprex | ton | 8.00 @ | 20.00 |
| Colloidal | lb. | .05 @ | .08 |
| Congaree, c. l. f.o.b. mine | ton | 9.00 @ | — |
| Dark Blue Ridge | ton | | |
| Dixie | ton | | |
| Langford | ton | | |
| Lexington | ton | 10.00 @ | 22.00 |
| Mineral Flour, c.l. f.o.b. mine | ton | 20.00 @ | 23.00 |
| Par | ton | | |
| Tensulite | | 15.00 @ | — |
| Glues, extra white | lb. | .25 @ | .26 |
| medium white | lb. | .22 @ | .24 |
| Magnesia, carbonate | lb. | .08¾@ | .11 |
| Mica, white water grnd. | lb. | .06 @ | .08 |
| Off color (biotite) | lb. | .05 @ | .07 |
| Rotten Stone (powdered) | lb. | .02 @ | .05 |
| Soapstone, powdered | ton | 15.00 @ | 22.00 |
| Starch, powdered | cwt. | — @ | 2.92 |
| Talc, domestic | ton | 12.00 @ | 15.00 |
| Pyrax A | ton | | |
| Whiting, commercial | cwt. | — @ | 1.00 |
| English cliffstone | cwt. | 1.75 @ | 2.00 |
| Quaker | ton | | |
| Superfine | ton | 10.00 @ | 12.00 |
| Sussex | ton | | |
| Witco | ton | 20.00 @ | — |
| Zinc Carbonate | lb. | .09½@ | .10½ |
| Zinc Stearate | lb. | .19 @ | .22 |

## MINERAL RUBBER

| | | | |
|---|---|---|---|
| Genasco (factory) | ton | 50.00 @ | 52.00 |
| Granulated M. R. | ton | | |
| Hard Hydrocarbon | ton | | |
| Paradura | ton | 62.50 @ | 65.00 |
| Parmr, solid | ton | 28.00 @ | 48.00 |
| Pioneer, MR, solid | ton | 40.00 @ | 42.00 |
| Pioneer-granulated | ton | 50.00 @ | 52.00 |
| R & H Hydro-Carbon | ton | 27.05 @ | 29.00 |
| Robertson, MR, solid | ton | 34.00 @ | 80.00 |
| M.R. (gran) | ton | 38.00 @ | 80.00 |

## SOFTENERS

| | | | |
|---|---|---|---|
| **Acids** | | | |
| Nitric, 36 degrees | cwt. | 5.00 @ | 5.25 |
| Sulfuric, 66 degrees | cwt. | 1.60 @ | 1.95 |
| Tartaric, crystals | lb. | — @ | .31½ |
| **Acids, Fatty** | | | |
| Laurex | lb. | .15 @ | .16 |
| Stearex | lb. | .13 @ | .17 |
| Stearic, double pressed | lb. | .17 @ | .22 |
| **Alkalies** | | | |
| Caustic soda, 76% | cwt. | 2.90 @ | — |
| Soda ash, 58% C.L. | cwt. | 1.17½@ | — |
| **Oils** | | | |
| Corn, refined, bbls. | lb. | .08¾@ | .10½ |
| Cottonseed, crude | | .06⅞@ | .07 |
| Cycline | gal. | .27 @ | .34 |
| Degras (c.l. 100 bbls.) | lb. | .03¾@ | — |
| Less c.l. (10-25 bbls.) | lb. | .04 @ | — |
| Lots less than 10 bbls. | lb. | .04¼@ | .04½ |
| Fluxrite | lb. | .05½@ | .06½ |
| Palm Lagos | lb. | .05 @ | .06 |
| Niger | lb. | .04½@ | .05¼ |
| Para-Flux | gal. | .17 @ | — |
| Petrolatum, white | lb. | .08 @ | .08½ |
| Pigmentaroil | gal. | .18 @ | .23 |
| Pine, steam distilled | gal. | .65 @ | .70 |
| destructively distilled | gal. | .54 @ | .55 |
| Witco Palm Oil | lb. | .11 @ | — |
| Witco Softener (f.o.b. wks.) | lb. | .02 @ | — |
| **Resins and Pitches** | | | |
| Pitch, Burgundy | lb. | .06½@ | .07½ |
| coal tar | gal. | .05½@ | .06 |
| pine, 200 lb. gr. wt. | bbl. | 7.00 @ | — |
| Rosin, grade K, 280 lb. | bbl. | — @ | 6.60 |
| Pigmentar | gal. | .18 @ | .23 |
| Tar Retort, 50 gal. | bbl. | 13.50 @ | 15.00 |
| **Solvents** | | | |
| Acetone, pure | lb. | .10 @ | .10½ |
| Alcohol, denatured, No. 1 bbls. | gal. | .27 @ | .29 |
| Benzol, 90% | gal. | .20 @ | .21 |
| Carbon, bisulphide | lb. | .05½@ | .06⅛ |
| Carbon, tetrachloride | lb. | .06¼@ | .07 |
| Dryolene (f.o.b. Okla.) | gal. | .10 @ | .10½ |
| Gasoline, steel bbls. | gal. | .16 @ | — |
| Naphtha, solvent | gal. | .30 @ | .38 |
| Rub-Sol (f.o.b. Okla.) | gal. | .09 @ | — |
| Turpentine, spirits | gal. | .54 @ | .56 |
| wood | gal. | .51 @ | .61 |
| destructively distilled | gal. | .35 @ | — |
| **Waxes** | | | |
| Beeswax, white | lb. | .34 @ | .36 |
| Carnauba | lb. | .26 @ | .28 |
| Ceresin, white | lb. | .10 @ | .11 |
| Montan, crude | lb. | .06½@ | .07 |
| Ozokerite, black | lb. | .24 @ | .25 |
| green | lb. | .26 @ | .30 |
| **Paraffin (c.l.—f.o.b. N. Y.)** | | | |
| Yellow crude scale | lb. | .02½@ | — |
| White crude scale 124/126 | lb. | .02½@ | — |
| Refined, 125/127 | lb. | .03⅝@ | — |
| Refined, 128/130 | lb. | .03¾@ | — |
| Refined, 135/137 | lb. | .05¼@ | — |
| Refined, 138/140 | lb. | .07¼@ | — |

## ANTI-OXIDANTS

| | | | |
|---|---|---|---|
| AgeRite, Gel | lb. | | |
| Powder | lb. | | |
| Resin | lb. | | |
| White | lb. | | |
| Albasan | lb. | .70 @ | .75 |
| Antox | lb. | | |
| B-L-E | lb. | .57 @ | .60 |
| Neozone | lb. | | |
| Oxynone | lb. | .68 @ | .80 |
| Resistox | lb. | .54 @ | .57 |
| Stabilite | lb. | .57 @ | .62 |
| Stabilite Alba | lb. | .70 @ | .75 |
| VGB | lb. | .55 @ | .66 |

## SPECIALTIES

| | | | |
|---|---|---|---|
| Aromatics—Rodo | lb. | | |
| Sunproof | lb. | .35 @ | .37½ |
| Sponge Paste | lb. | — @ | .30 |
| Tonox | lb. | .56 @ | .60 |

## SUBSTITUTES

| | | | |
|---|---|---|---|
| Black | lb. | .08 @ | .14 |
| White | lb. | .10 @ | .16 |
| Brown | lb. | .08 @ | .15 |

## VULCANIZING INGREDIENTS

| | | | |
|---|---|---|---|
| Sulfur Chloride (drums) | lb. | .03½@ | .04½ |
| Sulfur flour, Ref'n'd, 100% pure (bags) | cwt. | 2.40 @ | 2.75 |
| Commercial (bags | cwt. | 1.75 @ | 2.10 |
| Telloy | lb. | | |
| Vandex | lb. | | |

TIRES & TUBES
CRUDE RUBBER

# STATISTICAL SECTION

AUTOMOBILES
GASOLINE

GAINS in automobile production and tire output, together with declines in crude rubber output and foreign stocks, were the principal statistical developments of the month. April gasoline consumption at a figure somewhat lower than last year was slightly disappointing, but it is now generally conceded that passenger car registrations today are not as high as they were a year ago.

British warehouse stocks appear to have reached their peak and to have started on the downward grade. The total for London and Liverpool on May 30 was an even 139,000 tons as compared to the peak figure of 140,207 tons established on May 16. Singapore and Penang stocks also showed a decline, and stocks on estates in Malaya are believed to be lower.

Standard Statistics Service, however, in a report issued May 28, finds that "imports of rubber are increasing faster than demand, causing large expansion in domestic stocks on hand, in transit overland and afloat to this country. . . . Demand is unlikely to equal the fresh supplies expected to become available in the near term."

Latest figures covering imports and exports from the leading producing and consuming countries have been added to the appropriate tables in this section.

**PLAN OF THE SECTION**

**The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available.**

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## U. S. Imports and Exports of Crude Rubber

| YEARS | Gross Imports: Long Tons | Gross Imports: Total Declared Value | Gross Imports: Average Declared Value per pound Cents | Re-exports: Long Tons | Re-exports: Total Declared Value | Re-exports: Average Declared Value per pound Cents | Net Imports: Long Tons |
|---|---|---|---|---|---|---|---|
| 1921 | 185,394 | 73,772,677 | 17.76 | 5,716 | 2,414,924 | 18.86 | 179,678 |
| 1922 | 301,076 | 101,843,188 | 15.10 | 4,809 | 1,921,828 | 17.84 | 296,267 |
| 1923 | 309,144 | 185,060,304 | 26.72 | 8,772 | 5,672,319 | 28.87 | 300,372 |
| 1924 | 328,056 | 174,231,331 | 23.71 | 10,309 | 6,057,637 | 26.23 | 317,747 |
| 1925 | 396,642 | 429,705,014 | 48.36 | 14,827 | 19,847,753 | 59.76 | 381,815 |
| 1926 | 413,338 | 505,817,807 | 54.63 | 17,671 | 22,470,583 | 56.77 | 395,667 |
| 1927 | 426,258 | 339,874,774 | 35.60 | 27,775 | 24,735,488 | 39.76 | 398,483 |
| 1928 | 439,731 | 244,854,973 | 25.03 | 32,159 | 18,128,361 | 25.17 | 407,572 |
| 1929 | 560,084 | 239,178,783 | 19.15 | 36,485 | 16,868,733 | 20.64 | 523,599 |
| 1930 | 482,082 | 139,134,330 | 12.89 | 30,205 | 9,316,205 | 13.77 | 451,877 |
| 1928: | | | | | | | |
| July | 31,258 | 14,144,765 | 20.20 | 3,087 | 1,451,446 | 20.99 | 28,171 |
| Aug. | 31,204 | 12,860,150 | 18.39 | 2,377 | 1,084,646 | 20.37 | 28,827 |
| Sept. | 39,335 | 16,512,019 | 18.50 | 3,038 | 1,384,148 | 20.34 | 36,797 |
| Oct. | 44,058 | 18,200,332 | 18.44 | 2,405 | 1,085,407 | 20.15 | 41,653 |
| Nov. | 36,519 | 14,878,441 | 18.19 | 2,788 | 1,207,089 | 18.52 | 33,731 |
| Dec. | 43,511 | 17,580,966 | 18.04 | 2,738 | 1,165,743 | 19.00 | 40,773 |
| 1929: | | | | | | | |
| Jan. | 57,564 | 22,872,943 | 17.74 | 3,663 | 1,773,401 | 21.61 | 53,901 |
| Feb. | 64,265 | 24,760,111 | 17.20 | 2,955 | 1,374,783 | 20.77 | 61,310 |
| Mar. | 50,604 | 20,380,905 | 17.98 | 4,218 | 2,094,037 | 22.16 | 46,386 |
| Apr. | 55,725 | 25,542,726 | 20.46 | 3,293 | 1,624,237 | 22.02 | 52,432 |
| May | 51,161 | 24,355,511 | 21.25 | 2,836 | 1,349,690 | 21.24 | 48,325 |
| June | 41,663 | 18,799,307 | 20.14 | 3,152 | 1,470,746 | 20.83 | 38,511 |
| July | 43,944 | 19,342,147 | 19.65 | 3,424 | 1,590,411 | 20.73 | 40,520 |
| Aug. | 37,222 | 16,530,090 | 19.83 | 2,644 | 1,232,217 | 20.80 | 34,578 |
| Sept. | 34,472 | 15,214,485 | 19.76 | 2,011 | 861,068 | 19.11 | 32,461 |
| Oct. | 38,163 | 16,192,261 | 18.94 | 2,614 | 1,190,510 | 20.33 | 35,549 |
| Nov. | 43,507 | 18,189,305 | 18.66 | 2,929 | 1,300,354 | 19.82 | 40,578 |
| Dec. | 42,952 | 17,573,330 | 18.27 | 2,745 | 1,007,279 | 16.38 | 40,207 |
| 1930: | | | | | | | |
| Jan. | 47,496 | 17,793,563 | 16.72 | 3,144 | 1,077,415 | 15.30 | 44,352 |
| Feb. | 42,687 | 14,798,240 | 15.48 | 2,280 | 960,790 | 18.80 | 40,407 |
| Mar. | 44,976 | 14,653,243 | 14.54 | 3,187 | 1,192,708 | 16.71 | 41,789 |
| Apr. | 45,423 | 14,783,605 | 14.53 | 2,688 | 892,532 | 14.82 | 42,735 |
| May | 42,692 | 13,373,232 | 13.98 | 3,154 | 1,085,432 | 15.37 | 39,538 |
| June | 39,993 | 12,215,848 | 13.79 | 3,174 | 1,028,653 | 14.47 | 36,819 |
| July | 35,182 | 10,553,944 | 13.39 | 2,807 | 759,260 | 12.08 | 32,375 |
| Aug. | 35,713 | 9,666,362 | 12.08 | 2,357 | 655,778 | 12.42 | 33,356 |
| Sept. | 35,380 | 8,460,812 | 10.68 | 1,514 | 430,772 | 12.70 | 33,866 |
| Oct. | 46,069 | 9,893,980 | 9.59 | 2,432 | 419,325 | 7.70 | 43,637 |
| Nov. | 29,401 | 5,700,086 | 8.66 | 1,300 | 271,348 | 9.32 | 28,101 |
| Dec. | 37,300 | 7,175,242 | 8.59 | 2,168 | 542,197 | 11.17 | 35,132 |
| 1931: | | | | | | | |
| Jan. | 36,307 | 7,190,591 | 8.84 | 1,706 | 350,480 | 9.17 | 34,601 |
| Feb. | 34,005 | 6,564,969 | 8.62 | 1,799 | 357,078 | 8.86 | 32,206 |
| Mar. | 40,393 | 7,356,505 | 8.13 | 2,800 | 534,180 | 8.52 | 37,593 |
| Apr. | 44,536 | 7,712,941 | 7.73 | 2,607 | 528,947 | 9.06 | 41,929 |
| May | | | | | | | |
| June | | | | | | | |

## U. S. Consumption of Crude Rubber

*(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)*

**Figures on Monthly Basis**

| | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 | 1930 | 1931 |
|---|---|---|---|---|---|---|---|---|
| Jan. | 29,058 | 29,638 | 32,196 | 31,518 | 34,403 | 43,002 | 36,194 | 28,557 |
| Feb. | 25,736 | 29,761 | 31,136 | 30,137 | 33,702 | 41,594 | 32,302 | 28,797 |
| Mar. | 28,385 | 33,498 | 32,936 | 36,141 | 35,688 | 44,730 | 35,450 | 32,788 |
| Apr. | 27,129 | 34,139 | 32,696 | 35,871 | 32,772 | 47,521 | 39,686 | 33,321 |
| May | 25,845 | 35,322 | 29,364 | 34,592 | 37,333 | 49,233 | 39,386 | ..... |
| June | 22,753 | 35,822 | 28,598 | 33,801 | 37,676 | 43,227 | 34,195 | ..... |
| July | 23,396 | 36,053 | 27,577 | 29,219 | 37,407 | 41,526 | 29,508 | ..... |
| Aug. | 28,982 | 35,909 | 34,533 | 33,460 | 42,927 | 38,274 | 30,850 | ..... |
| Sept. | 31,497 | 31,691 | 32,904 | 27,214 | 39,882 | 34,707 | 25,515 | ..... |
| Oct. | 31,520 | 29,047 | 29,836 | 26,790 | 40,857 | 34,800 | 27,516 | ..... |
| Nov. | 27,289 | 28,253 | 28,080 | 26,792 | 37,461 | 27,659 | 23,691 | ..... |
| Dec. | 27,199 | 28,748 | 26,293 | 25,492 | 31,232 | 23,531 | 21,687 | ..... |
| Totals | 328,769 | 388,481 | 366,149 | 371,027 | 441,340 | 469,804 | 375,980 | ..... |

**Figures on Quarterly Basis**

| Quarter | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 | 1930 |
|---|---|---|---|---|---|---|---|---|
| Jan./Mar. | 96,776 | 87,609 | 95,263 | 94,801 | 99,218 | 103,558 | 128,565 | 101,610 |
| Apr./June | 89,493 | 75,674 | 104,099 | 87,109 | 103,242 | 103,500 | 139,292 | 112,229 |
| July/Sept. | 55,621 | 83,813 | 99,493 | 93,793 | 89,210 | 117,573 | 113,746 | 85,261 |
| Oct./Dec. | 63,617 | 92,656 | 85,789 | 83,212 | 80,860 | 117,597 | 84,872 | 72,020 |
| Totals | 305,507 | 339,752 | 384,644 | 358,415 | 372,528 | 442,227 | 466,475 | 371,120 |

**Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.**

## U. S. Consumption of Gasoline

*(In Barrels of 42 Gallons)*

| MONTHS | 1930 | 1931 | MONTHS | 1930 | 1931 |
|---|---|---|---|---|---|
| January | 25,731,000 | 26,844,000 | July | 38,256,000 | |
| February | 26,509,000 | 26,133,000 | August | 37,433,000 | |
| March | 31,029,000 | 31,037,000 | September | 37,823,000 | |
| April | 34,549,000 | 33,400,000 | October | 32,267,000 | |
| May | 36,497,000 | | November | 30,984,000 | |
| June | 35,902,000 | | December | 29,094,000 | |

## Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | Ave |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1929** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| February | 22¾ | 22 | | 21⅞ | 22¾ | 22¾ | 22¼ | 22¾ | 22¾ | — | 22¼ | — | 22⅞ | 23 | 25⅝ | 25⅝ | — | 25⅜ | 25¼ | 25 | 25⅝ | 23⅝ | 23¼ | — | 26¼ | 26⅜ | 26¼ | 26½ | — | — | — | 24 |
| March | 26 | 26 | | 26 | 26 | 26 | 25⅝ | 25⅞ | 25⅞ | — | 25¾ | 25¾ | 25⅝ | 24¾ | 24⅝ | 24⅝ | — | 24⅝ | 24¾ | 23 | 23½ | 22½ | 22⅝ | — | 23 | 22½ | 22½ | 22½ | — | — | — | 24¼ |
| April | 23 | 23¼ | | 22½ | 22½ | 22½ | — | 20⅞ | 21⅞ | 22⅝ | 22⅝ | 21⅞ | 21⅞ | 22⅜ | 22¼ | 22¼ | 21⅝ | 22⅞ | 20 | 19⅝ | 23½ | 22⅝ | 20⅜ | 19⅝ | — | 21¼ | 19⅝ | 19⅝ | 19⅝ | — | — | — | 21½ |
| May | 19⅝ | 19⅝ | | 19⅝ | 19⅝ | 20¼ | 20¼ | 21⅛ | 21⅝ | 21 | 21 | 21 | 21⅝ | 22⅜ | 22¼ | 22¼ | 22¼ | 22⅞ | 23⅜ | 23½ | 22⅝ | 22⅝ | 21¾ | 21¾ | 21¾ | 21¾ | 21¾ | 21¾ | 21¾ | 21¼ | — | — | 21½ |
| June | 21⅞ | 21⅞ | | 21⅞ | 21⅞ | 21¾ | 21¾ | 21¾ | 22⅛ | 20⅝ | 20⅝ | 20⅝ | 21⅜ | 20⅝ | 21⅛ | 21⅛ | 21⅛ | 21⅜ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 21⅛ | 21⅛ | 21⅛ | 20⅝ |
| July | 20⅝ | 21¼ | | 21¼ | 21¼ | 21¼ | 21¼ | 22⅛ | 21⅝ | 22 | 22 | — | 21⅜ | 21⅜ | 21⅛ | 20⅝ | 21 | 21 | 20⅝ | 20⅝ | 20⅝ | 21¼ | 21¼ | 21⅛ | 20⅝ | 21⅛ | 21⅛ | 21⅛ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 21¼ |
| Aug. | 21⅜ | 21 | | 21 | 21 | 21 | 21 | 21 | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ |
| Sept. | — | — | | 20¼ | 20¼ | 20¼ | 20¼ | — | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ | 20⅝ |
| Oct. | 19⅞ | 19½ | | 19½ | 19⅝ | — | 17⅞ | 16⅝ | — | 16⅝ | 16½ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 17 | 17 | — | 16⅝ | 16⅝ | 16½ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ |
| Nov. | 17⅞ | 17½ | | 17½ | 17½ | — | 17 | 16⅝ | — | 16⅝ | 16½ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 17 | 17 | 16¼ | 16⅝ | 16⅝ | 16½ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ |
| Dec. | — | 16¼ | | 16¼ | 16¼ | 16¼ | 16¼ | 16¼ | — | 16⅝ | 16½ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | — | 16¼ | 16 | 15⅝ | 15⅝ | 15⅝ | — | 15½ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ |
| **1930** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| January | — | 15⅝ | | 15⅝ | 16⅝ | 16⅝ | 16⅝ | 16⅝ | 15⅝ | — | — | — | 14⅞ | 14⅝ | 14⅝ | 14⅝ | 15½ | 15½ | — | 14⅝ | 14⅞ | 14⅞ | 15⅛ | 15⅛ | 15⅛ | 15⅛ | 15⅛ | 15⅛ | 15⅛ | 15⅛ | 15⅛ | 15⅛ | 15¼ |
| February | — | — | | 15⅝ | 16⅝ | 16⅝ | 15⅝ | 15⅝ | 15⅝ | — | — | — | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 16⅛ | 16⅛ | 16½ | 16⅝ | 16½ | 16½ | 15½ | 15½ | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 15⅞ |
| March | 15⅜ | — | | 16½ | 16½ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | — | 15 | 15 | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | — | 15⅝ | 15⅝ | 15⅛ | 15⅛ | 15⅛ | 15⅛ | 15⅛ | 15⅛ | 15⅛ | 15⅛ | 15⅛ | 15⅛ | 15⅛ | 15⅛ |
| April | 15⅛ | 15⅛ | | 15⅝ | 16⅛ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ | 15⅝ |
| May | 14⅝ | 14⅝ | | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ | 14⅝ |
| June | 13¾ | 13¾ | | 13⅝ | 13⅝ | 13⅝ | 13⅝ | 13⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ | 12⅝ |
| July | 12¼ | 12¼ | | 12 | — | 12 | 12 | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ | 11⅝ |
| August | 10⅝ | 10⅝ | | 10½ | 10½ | 10½ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ | 10⅝ |
| September | — | 9¾ | | 9¾ | 9¾ | 9¾ | 9¾ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ |
| October | 7⅛ | 7⅛ | | 8 | — | 8 | 8 | 8 | 8 | 7⅞ | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| November | 8⅝ | 8⅝ | | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ | 8⅝ |
| December | 9½ | 9½ | | 9½ | 9¼ | — | 8⅝ | 9⅜ | 9½ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ | 9⅝ |
| **1931** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| January | — | 8⅜ | | 8⅜ | — | 8½ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8⅜ | 8¼ | 8¼ | 8¼ | 8¼ | 8¼ | 8¼ | 8¼ | 8¼ | 8¼ | 8¼ | 8 | 8⅜ |
| February | — | 7¾ | | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 8 | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ | 7⅞ |
| March | — | 7¾ | | 8⅝ | 8¾ | 8⅜ | 8⅛ | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| April | 6⅞ | 6⅞ | | — | — | 6¾ | 6¾ | 6¾ | 6¾ | 6¾ | 6¾ | 6¾ | 6¾ | 6¾ | 6¾ | 6¾ | 6¾ | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| May | 6 | 6 | | — | 6⅛ | 6⅛ | 6¾ | 6⅝ | 6⅝ | 6⅝ | 6⅝ | 6⅝ | 6⅝ | 6⅝ | 6⅝ | 6⅝ | 6⅝ | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| June | 6⅜ | 6⅜ | | 6⅜ | 6⅜ | 6⅜ | 6⅜ | 6⅜ | 6⅜ | 6⅜ | 6⅜ | 6⅜ | 6⅜ | 6⅜ | 6⅜ | 6⅜ | 6⅜ | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

# Average Spot Closing Prices—Ribbed Smoked Sheets

*(New York Market)*

### Average Price per Pound for Years 1910-1921

| Year | Cents | Year | Cents | Year | Cents |
|---|---|---|---|---|---|
| 1910 | 206.60 | 1914 | 65.33 | 1918 | 60.15 |
| 1911 | 141.30 | 1915 | 65.85 | 1919 | 48.70 |
| 1912 | 121.60 | 1916 | 72.50 | 1920 | 86.30 |
| 1913 | 82.04 | 1917 | 72.23 | 1921 | 16.36 |

### Average Monthly Price per Pound Since 1922

| Month | 1922 Cents | 1923 Cents | 1924 Cents | 1925 Cents | 1926 Cents | 1927 Cents | 1928 Cents | 1929 Cents | 1930 Cents | 1931 Cents |
|---|---|---|---|---|---|---|---|---|---|---|
| Jan. | 18.82 | 32.73 | 25.86 | 36.71 | 79.50 | 38.75 | 40.25 | 20.14 | 15.24 | 8.34 |
| Feb. | 16.12 | 35.14 | 25.29 | 36.01 | 62.25 | 38.25 | 32.75 | 23.97 | 15.85 | 7.70 |
| Mar. | 14.53 | 34.21 | 22.83 | 41.00 | 59.00 | 41.04 | 26.82 | 24.55 | 15.34 | 7.71 |
| Apr. | 15.99 | 32.48 | 22.51 | 43.64 | 51.25 | 40.86 | 18.97 | 21.18 | 14.93 | 6.43 |
| May | 15.25 | 27.39 | 18.89 | 58.47 | 47.75 | 40.76 | 18.99 | 21.46 | 14.24 | 6.49 |
| June | 15.11 | 26.88 | 18.81 | 77.26 | 42.50 | 37.25 | 19.59 | 20.64 | 12.45 | |
| July | 14.67 | 26.10 | 22.16 | 103.16 | 41.03 | 34.87 | 19.40 | 21.30 | 11.24 | |
| Aug. | 13.93 | 28.84 | 26.17 | 82.99 | 38.50 | 35.12 | 19.46 | 20.59 | 9.96 | |
| Sept. | 14.44 | 28.95 | 27.56 | 88.88 | 41.00 | 33.67 | 18.47 | 20.37 | 8.28 | |
| Oct. | 19.78 | 26.93 | 31.13 | 98.01 | 42.50 | 34.32 | 18.83 | 19.67 | 8.20 | |
| Nov. | 23.88 | 27.14 | 34.33 | 104.80 | 38.50 | 37.58 | 18.26 | 16.62 | 9.01 | |
| Dec. | 27.42 | 26.60 | 37.88 | 98.51 | 38.25 | 40.63 | 17.97 | 16.12 | 9.05 | |
| Average for Year | 17.50 | 29.45 | 26.20 | 72.46 | 48.50 | 37.72 | 22.48 | 20.55 | 11.98 | |

# London Closing Prices of Ribbed Smoked Sheet

*(In Pence Per Pound)*

| Day | Mar. | Apr. | May | June | Day | Mar. | Apr. | May | June |
|---|---|---|---|---|---|---|---|---|---|
| 1 | — | 3¼ | 2⅞ | 3 | 17 | 3⅞ | 3⅛ | — | — |
| 2 | 3⅞ | 3⅜ | 2⅞ | 3 | 18 | 3⅞ | 3⅛ | 3⅛ | — |
| 3 | 4⅛ | — | — | — | 19 | 3⅞ | — | 3¼ | — |
| 4 | 4⅛ | — | 2⅞ | — | 20 | 3¾ | 3 | 3⅛ | — |
| 5 | 4⅛ | — | 2⅞ | — | 21 | 3¾ | 2⅞ | 3⅛ | — |
| 6 | 4⅛ | — | 2⅞ | — | 22 | — | 2⅞ | 3⅛ | — |
| 7 | 4 | 3¼ | 3 | — | 23 | 3¾ | 2⅞ | 3⅛ | — |
| 8 | — | 3¼ | 3 | — | 24 | 3⅝ | 2⅞ | — | — |
| 9 | 3⅞ | 3⅛ | 3 | — | 25 | 3½ | — | — | — |
| 10 | 3⅞ | 3¼ | — | — | 26 | 3½ | — | 3 | — |
| 11 | 4 | 3¼ | 3 | — | 27 | 3½ | 2⅞ | 3 | — |
| 12 | 4 | — | 3 | — | 28 | 3½ | 2⅞ | 3⅛ | — |
| 13 | 4 | 3¼ | 3 | — | 29 | — | 2⅞ | 3⅛ | — |
| 14 | 3⅞ | 3¼ | 3 | — | 30 | 3½ | 2¾ | 3⅛ | — |
| 15 | — | 3¼ | 3¼ | — | 31 | 3⅜ | — | — | — |
| 16 | 3⅞ | 3¼ | 3⅛ | — | | | | | |

### Average Monthly Price Per Pound

| Month | 1929 Pence | 1930 Pence | 1931 Pence | Month | 1929 Pence | 1930 Pence | 1931 Pence |
|---|---|---|---|---|---|---|---|
| Jan. | 9.942 | 7.471 | 4.160 | Aug. | 10.505 | 4.880 | |
| Feb. | 11.875 | 7.948 | 3.823 | Sept. | 10.160 | 4.075 | |
| Mar. | 12.135 | 7.595 | 3.822 | Oct. | 9.620 | 4.023 | |
| Apr. | 10.490 | 7.391 | 3.082 | Nov. | 8.442 | 4.440 | |
| May | 10.717 | 6.926 | 3.035 | Dec. | 7.958 | 4.516 | |
| June | 10.580 | 6.195 | | Average for Year | 10.291 | 5.926 | |
| July | 11.065 | 5.648 | | | | | |

# Spot Closing Cotton Prices

*(Middling Upland Grade—New York Market)*

### Recent Daily Price Per Pound

| Day of Month | May | June | Day of Month | May | June | Day of Month | May | June |
|---|---|---|---|---|---|---|---|---|
| 1 | 9.50 | 8.55 | 11 | 9.90 | —— | 21 | 9.30 | —— |
| 2 | 9.40 | 8.35 | 12 | 9.85 | —— | 22 | 9.25 | —— |
| 3 | —— | 8.60 | 13 | 9.75 | —— | 23 | 9.25 | —— |
| 4 | 9.45 | 8.80 | 14 | 9.60 | —— | 24 | —— | —— |
| 5 | 9.70 | —— | 15 | 9.50 | —— | 25 | 8.75 | —— |
| 6 | 9.80 | —— | 16 | 9.40 | —— | 26 | 8.65 | —— |
| 7 | 9.85 | —— | 17 | —— | —— | 27 | 8.65 | —— |
| 8 | 10.00 | —— | 18 | 9.15 | —— | 28 | 8.65 | —— |
| 9 | 10.00 | —— | 19 | 9.10 | —— | 29 | 8.75 | —— |
| 10 | —— | —— | 20 | 9.30 | —— | 30 | —— | —— |
| | | | | | | 31 | —— | —— |

### Average Monthly Price Per Pound

| | 1929 Cents | 1930 Cents | 1931 Cents | | 1929 Cents | 1930 Cents | 1931 Cents |
|---|---|---|---|---|---|---|---|
| Jan. | 20.22 | 17.21 | 10.27 | Aug. | 18.62 | 12.03 | |
| Feb. | 20.21 | 15.62 | 10.96 | Sept. | 18.83 | 10.85 | |
| Mar. | 20.19 | 15.13 | 10.90 | Oct. | 18.46 | 10.63 | |
| Apr. | 20.29 | 16.39 | 10.19 | Nov. | 17.53 | 10.96 | |
| May | 19.41 | 16.43 | 9.38 | Dec. | 17.28 | 10.02 | |
| June | 18.74 | 14.48 | | Average for Year | 19.03 | 13.57 | |
| July | 18.62 | 13.10 | | | | | |

# World Stocks of Crude Rubber

## ON HAND OR AFLOAT TO THE U. S.

| At End of | ON HAND 1929 | 1930 | 1931 | AFLOAT 1929 | 1930 | 1931 | ON HAND AND AFLOAT 1929 | 1930 | 1931 |
|---|---|---|---|---|---|---|---|---|---|
| Jan. | 76,342 | 131,744 | 209,487 | 93,330 | 61,863 | 56,187 | 169,672 | 193,607 | 265,674 |
| Feb. | 90,058 | 143,863 | 212,833 | 75,790 | 63,404 | 63,680 | 165,848 | 207,267 | 276,513 |
| Mar. | 100,536 | 141,843 | 217,804 | 67,065 | 63,646 | 63,133 | 167,601 | 205,489 | 280,937 |
| Apr. | 107,659 | 148,272 | 228,382 | 65,798 | 63,261 | 56,700 | 173,457 | 211,533 | 285,082 |
| May | 97,192 | 146,179 | ..... | 65,793 | 68,168 | ..... | 162,985 | 214,347 | ..... |
| June | 92,061 | 151,551 | ..... | 54,668 | 58,657 | ..... | 146,729 | 210,209 | ..... |
| July | 92,535 | 152,001 | ..... | 46,145 | 58,326 | ..... | 138,680 | 210,327 | ..... |
| Aug. | 90,769 | 158,604 | ..... | 49,423 | 61,168 | ..... | 140,192 | 219,772 | ..... |
| Sept. | 84,362 | 169,927 | ..... | 58,758 | 60,923 | ..... | 143,120 | 230,851 | ..... |
| Oct. | 88,483 | 185,470 | ..... | 59,180 | 51,122 | ..... | 147,663 | 236,593 | ..... |
| Nov. | 92,219 | 189,925 | ..... | 62,358 | 52,538 | ..... | 154,577 | 242,463 | ..... |
| Dec. | 118,609 | 200,998 | ..... | 62,388 | 56,035 | ..... | 180,997 | 257,033 | ..... |

(Rubber Manufacturers' Association figures raised to 100%)

## STOCKS IN GREAT BRITAIN

### Stocks in London

*(No. of Tons in Wharves and Warehouses, including Latex)*

| At end of | 1929 | 1930 | 1931 | At end of | 1929 | 1930 | 1931 |
|---|---|---|---|---|---|---|---|
| Jan. | 25,191 | 60,434 | 81,093 | July | 30,080 | 81,048 | |
| Feb. | 25,554 | 64,557 | 82,265 | Aug. | 35,605 | 80,931 | |
| Mar. | 28,214 | 68,923 | 84,736 | Sept. | 42,188 | 83,329 | |
| Apr. | 31,368 | 74,676 | | Oct. | 47,803 | 77,647 | |
| May | 31,290 | 77,312 | | Nov. | 52,454 | 76,887 | |
| June | 31,025 | 80,260 | | Dec. | 54,304 | 78,013 | |

### At End of Recent Weeks

| | First Saturday | Second Saturday | Third Saturday | Fourth Saturday | Fifth Saturday |
|---|---|---|---|---|---|
| **1931** | | | | | |
| January | 78,042 | 78,761 | 79,261 | 80,194 | 81,039 |
| February | 81,183 | 81,432 | 82,111 | 82,185 | |
| March | 83,451 | 83,001 | 83,132 | 83,862 | |
| April | 84,339 | 84,421 | 85,704 | 85,922 | |
| May | 86,512 | 86,663 | 86,037 | 85,739 | 85,332 |

### Stocks in Liverpool

| | | | | | |
|---|---|---|---|---|---|
| **1931** | | | | | |
| January | 41,516 | 41,814 | 42,270 | 42,171 | 43,463 |
| February | 43,293 | 43,679 | 44,555 | 44,776 | |
| March | 45,487 | 47,105 | 48,333 | 48,321 | |
| April | 49,502 | 49,733 | 51,221 | 52,043 | |
| May | 51,926 | 52,865 | 54,170 | 53,842 | 53,668 |

## STOCKS IN PENANG AND SINGAPORE

*(Stocks held by Dealers—Quantities in Long Tons)*

| End of | 1929 | 1930 | 1931 | End of | 1929 | 1930 | 1931 |
|---|---|---|---|---|---|---|---|
| Jan. | 29,617 | 39,727 | 49,802 | July | 33,859 | 45,459 | |
| Feb. | 32,373 | 44,371 | 49,288 | Aug. | 30,834 | 48,132 | |
| Mar. | 29,437 | 45,657 | 49,590 | Sept. | 32,138 | 44,015 | |
| Apr. | 26,474 | 48,473 | 45,868 | Oct. | 33,770 | 39,930 | |
| May | 30,764 | 44,715 | | Nov. | 30,963 | 41,674 | |
| June | 30,403 | 42,451 | | Dec. | 35,548 | 45,963 | |

## STOCKS IN OTHER CENTRES

| 1930 End of | Malaya Mainland | Afloat for Europe | Holland | Colombo | Para and Manaos |
|---|---|---|---|---|---|
| Apr. | 29,758 | 23,580 | 2,204 | 4,000 | 4,482 |
| May | 26,482 | 22,730 | 2,308 | 4,000 | 4,388 |
| June | 26,578 | 20,920 | 2,316 | 3,856 | 4,588 |
| July | 28,311 | 27,290 | 2,312 | 4,500 | 4,665 |
| Aug. | 29,482 | 30,310 | 2,196 | 5,200 | 4,489 |
| Sept. | 29,863 | 31,000 | 2,343 | 5,834 | 4,854 |
| Oct. | 28,587 | 27,630 | 2,378 | 5,600 | 5,156 |
| Nov. | 40,551 | 24,220 | 2,405 | 5,400 | 4,535 |
| Dec. | 40,919 | 25,980 | 2,569 | 5,189 | 5,132 |
| 1931: | | | | | |
| Jan. | 41,620 | 24,500 | 3,168 | | 5,124 |
| Feb. | 43,027 | 24,580 | 3,326 | | 5,404 |
| Mar. | 40,227 | 25,800 | | 3,857 | 4,843 |

# Rims Inspected and Passed in U. S.

*(Tire and Rim Association Reports)*

| | Total | Per Cent Balloons | | Total | Per Cent Balloons |
|---|---|---|---|---|---|
| 1923 | 23,140,620 | 0.6 | 1927 | 19,700,003 | 79.1 |
| 1924 | 21,862,311 | 19.7 | 1928 | 24,247,282 | 81.6 |
| 1925 | 26,001,664 | 66.8 | 1929 | 24,141,502 | 80.3 |
| 1926 | 24,199,524 | 78.8 | 1930 | 17,364,096 | 80.1 |
| 1930 | | | 1931 | | |
| July | 1,449,161 | 80.7 | January | 681,301 | 67.9 |
| August | 1,504,187 | 78.1 | February | 1,010,774 | 73.9 |
| September | 1,052,109 | 80.2 | March | 1,425,336 | 81.4 |
| October | 863,579 | 73.3 | April | 1,717,652 | 79.9 |
| November | 920,435 | 72.2 | May | | |
| December | 567,355 | 69.1 | June | | |

# U. S. Tire and Tube Statistics

*(All Figures Represent Thousands)*

## AUTOMOBILE CASINGS

### Figures for Recent Years

| | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 | 1930 |
|---|---|---|---|---|---|---|---|---|
| Production | 45,259 | 51,633 | 60,845 | 61,237 | 64,439 | 77,944 | 68,726 | 50,965 |
| Shipments | 45,204 | 50,120 | 59,262 | 59,002 | 64,059 | 74,296 | 69,395 | 53,638 |
| Inventory[2] | 5,772 | 7,427 | 8,142 | 10,456 | 10,264 | 13,624 | 11,838 | 9,003 |

### Figures for Recent Months

| | PRODUCTION 1929 | 1930 | 1931 | SHIPMENTS 1929 | 1930 | 1931 | INVENTORY 1929 | 1930 | 1931 |
|---|---|---|---|---|---|---|---|---|---|
| Jan. | 6,301 | 4,485 | 3,675 | 6,211 | 4,406 | 3,744 | 12,855 | 11,924 | 8,957 |
| Feb. | 6,479 | 4,555 | 3,985 | 4,951 | 4,195 | 3,402 | 14,525 | 11,410 | 9,536 |
| Mar. | 7,049 | 4,863 | 4,663 | 6,289 | 4,717 | 4,122 | 15,329 | 12,513 | 10,014 |
| Apr. | 7,391 | 5,648 | | 6,838 | 5,089 | | 15,870 | 13,076 | |
| May | 7,636 | 3,717 | | 6,735 | 5,216 | | 16,733 | 13,432 | |
| June | 6,847 | 5,122 | | 6,800 | 5,294 | | 16,497 | 13,277 | |
| July | 6,320 | 3,991 | | 7,364 | 5,447 | | 15,034 | 11,812 | |
| Aug. | 5,693 | 4,166 | | 7,354 | 5,175 | | 13,337 | 10,848 | |
| Sept. | 4,460 | 3,365 | | 5,623 | 4,405 | | 12,070 | 9,812 | |
| Oct. | 4,611 | 3,582 | | 4,649 | 3,499 | | 12,042 | 9,803 | |
| Nov. | 3,378 | 2,654 | | 3,355 | 2,834 | | 12,127 | 9,595 | |
| Dec. | 3,057 | 2,814 | | 3,237 | 3,361 | | 11,838 | 9,003 | |

## AUTOMOBILE INNER TUBES

### Figures for Recent Years

| | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 | 1930 |
|---|---|---|---|---|---|---|---|---|
| Production | 60,116 | 70,706 | 82,614 | 76,618 | 70,823 | 80,180 | 68,829 | 52,420 |
| Shipments | 59,072 | 68,106 | 81,004 | 71,591 | 72,896 | 77,127 | 70,592 | 54,938 |
| Inventory[2] | 8,425 | 11,052 | 11,313 | 16,200 | 13,692 | 16,117 | 12,807 | 9,999 |

### Figures for Recent Months

| | PRODUCTION 1929 | 1930 | 1931 | SHIPMENTS 1929 | 1930 | 1931 | INVENTORY 1929 | 1930 | 1931 |
|---|---|---|---|---|---|---|---|---|---|
| Jan. | 6,109 | 4,607 | 3,623 | 6,789 | 4,857 | 4,062 | 14,424 | 12,704 | 9,439 |
| Feb. | 6,346 | 4,634 | 3,916 | 4,948 | 4,337 | 3,400 | 15,936 | 13,036 | 9,921 |
| Mar. | 7,000 | 4,941 | 4,450 | 6,317 | 4,727 | 3,789 | 16,641 | 13,179 | 10,475 |
| Apr. | 7,157 | 5,510 | | 6,716 | 4,848 | | 17,000 | 13,784 | |
| May | 7,181 | 5,535 | | 6,598 | 5,074 | | 17,745 | 13,852 | |
| June | 6,542 | 4,950 | | 6,515 | 5,265 | | 17,294 | 13,612 | |
| July | 5,793 | 3,939 | | 7,605 | 5,855 | | 15,311 | 11,657 | |
| Aug. | 5,481 | 4,796 | | 7,672 | 5,762 | | 13,072 | 10,737 | |
| Sept. | 5,190 | 3,817 | | 5,859 | 4,541 | | 12,585 | 10,065 | |
| Oct. | 5,000 | 3,951 | | 4,689 | 3,472 | | 12,802 | 10,517 | |
| Nov. | 3,544 | 2,680 | | 3,480 | 2,788 | | 12,845 | 10,313 | |
| Dec. | 3,484 | 3,060 | | 3,404 | 3,412 | | 12,807 | 9,999 | |

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% complete up until 1929 and 80% complete beginning with 1929, and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

# Automobile Production

| | United States Total | Passenger Cars | Trucks | Canada Total | Passenger Cars | Trucks | Grand Total |
|---|---|---|---|---|---|---|---|
| 1924 | 3,600,918 | 3,203,049 | 397,869 | 135,246 | 117,765 | 17,481 | 3,736,164 |
| 1925 | 4,265,704 | 3,760,459 | 505,245 | 161,389 | 139,311 | 22,078 | 4,427,093 |
| 1926 | 4,298,799 | 3,808,753 | 490,046 | 205,002 | 164,483 | 40,609 | 4,503,891 |
| 1927 | 3,393,887 | 2,938,868 | 453,019 | 179,426 | 146,850 | 32,556 | 3,573,313 |
| 1928 | 4,357,384 | 3,826,613 | 530,771 | 242,382 | 196,737 | 45,645 | 4,599,944 |
| **1929** | | | | | | | |
| July | 500,331 | 427,213 | 73,118 | 17,461 | 13,600 | 3,861 | 517,792 |
| Aug. | 499,629 | 444,711 | 54,918 | 14,214 | 11,037 | 3,177 | 513,843 |
| Sept. | 415,332 | 365,651 | 49,681 | 13,817 | 10,710 | 3,107 | 429,149 |
| Oct. | 380,011 | 321,195 | 58,816 | 14,523 | 9,975 | 5,548 | 394,534 |
| Nov. | 217,570 | 170,928 | 46,642 | 9,424 | 7,137 | 2,287 | 226,994 |
| Dec. | 119,950 | 92,717 | 27,233 | 5,495 | 4,426 | 1,069 | 125,445 |
| TOTAL | 5,358,420 | 4,587,400 | 771,020 | 263,295 | 207,498 | 55,797 | 5,621,715 |
| **1930** | | | | | | | |
| Jan. | 273,089 | 235,099 | 37,990 | 10,388 | 8,856 | 1,532 | 283,477 |
| Feb. | 346,940 | 297,482 | 49,457 | 15,548 | 13,021 | 2,527 | 362,488 |
| March | 401,378 | 336,178 | 64,200 | 20,730 | 17,165 | 3,565 | 422,108 |
| April | 442,630 | 375,171 | 67,459 | 24,257 | 20,872 | 3,385 | 466,887 |
| May | 417,154 | 362,784 | 54,370 | 24,672 | 21,251 | 3,421 | 441,826 |
| June | 335,475 | 289,704 | 45,771 | 15,090 | 12,194 | 2,896 | 350,565 |
| July | 262,363 | 222,700 | 39,663 | 10,188 | 8,556 | 1,632 | 272,551 |
| Aug. | 224,368 | 187,288 | 35,758 | 9,792 | 6,946 | 2,846 | 234,160 |
| Sept. | 216,877 | 175,720 | 41,157 | 7,957 | 5,623 | 2,334 | 224,834 |
| Oct. | 150,044 | 112,800 | 37,244 | 4,541 | 3,206 | 1,335 | 154,585 |
| Nov. | 135,752 | 102,957 | 32,795 | 5,407 | 3,527 | 1,880 | 141,159 |
| Dec. | 155,701 | 124,173 | 31,528 | 5,622 | 4,225 | 1,397 | 161,323 |
| Total | 3,355,986 | 2,814,452 | 540,534 | 154,192 | 125,442 | 28,750 | 3,510,178 |
| 1931 | | | | | | | |
| Jan. | 171,848 | 138,317 | 33,531 | 6,496 | 4,552 | 1,944 | 178,344 |
| Feb. | 219,940 | 180,419 | 39,521 | 9,871 | 7,529 | 2,342 | 229,811 |
| Mar. | 276,405 | 231,244 | 45,161 | 12,993 | 10,483 | 2,510 | 289,398 |
| Apr. | 335,708 | 285,693 | 50,015 | 17,159 | 14,043 | 3,116 | 352,869 |
| May | | | | | | | |
| June | | | | | | | |

# Exports of Crude Rubber from Principal Producing Countries

*(Long Tons)*

| | BRITISH MALAYA[1] | | | | | | | DUTCH EAST INDIES[3] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gross Exports | Imports | Gross Exports Minus Imports | Ceylon[2] | India & Burma[2] | Sarawak[4] | British North Borneo[2] | Siam[4] | Java & Madura | Sumatra E. Coast | Other D.E.I. | Indo-China[2] | Amazon Valley | All Other[6] | World Total[7] |
| 1923 | 252,016 | 70,432 | 181,584 | 39,971 | 6,416 | 5,705 | 4,237 | 1,718 | 32,930 | 46,344 | 57,822 | 5,067 | 16,765 | 7,856 | 406,955 |
| 1924 | 259,706 | 108,524 | 151,182 | 39,997 | 7,697 | 6,699 | 4,621 | 2,962 | 42,446 | 54,497 | 80,347 | 6,688 | 23,165 | 9,065 | 429,366 |
| 1925 | 316,825 | 158,022 | 158,803 | 49,566 | 10,082 | 5,424 | 5,377 | 5,377 | 46,757 | 65,499 | 120,626 | 7,881 | 25,298 | 13,797 | 517,528 |
| 1926 | 391,328 | 151,243 | 240,085 | 58,962 | 9,874 | 9,155 | 6,079 | 4,027 | 52,186 | 71,413 | 121,231 | 8,203 | 24,298 | 16,017 | 621,530 |
| 1927 | 371,322 | 182,845 | 188,477 | 55,356 | 11,321 | 10,923 | 6,582 | 5,472 | 55,297 | 77,815 | 142,171 | 8,645 | 28,782 | 15,633 | 606,474 |
| 1928 | 409,430 | 149,787 | 259,643 | 57,267 | 10,790 | 10,087 | 6,698 | 4,813 | 58,848 | 82,511 | 121,770 | 9,548 | 21,129 | 10,690 | 553,794 |
| 1929 | 574,836 | 163,092 | 411,744 | 81,584 | 11,663 | 11,077 | 7,381 | 5,018 | 65,990 | 87,789 | 134,037 | 9,696 | 21,148 | 6,767 | 853,894 |
| 1930 | 547,043 | 133,876 | 413,167 | 76,970 | 10,782 | 10,309 | 6,781 | 4,251 | 69,755 | 79,396 | 115,254 | 7,665 | 14,260 | 5,651 | 814,241 |
| 1929: | | | | | | | | | | | | | | | |
| Apr. | 49,816 | 11,414 | 38,402 | 5,097 | 727 | 747 | 548 | 306 | 5,997 | 6,645 | 11,321 | 673 | 1,950 | 569 | 72,982 |
| May | 43,960 | 15,593 | 28,367 | 5,723 | 800 | 966 | 548 | 453 | 6,264 | 6,961 | 13,437 | 1,059 | 1,922 | 733 | 67,233 |
| June | 40,398 | 14,344 | 26,054 | 5,563 | 1,122 | 1,061 | 547 | 422 | 5,582 | 6,693 | 11,270 | 757 | 1,398 | 548 | 61,017 |
| July | 46,454 | 15,071 | 31,383 | 5,457 | 974 | 1,247 | 641 | 462 | 6,422 | 7,192 | 13,995 | 575 | 1,457 | 543 | 70,348 |
| Aug. | 50,441 | 15,469 | 34,972 | 6,079 | 685 | 993 | 641 | 431 | 4,644 | 7,298 | 10,782 | 1,032 | 1,563 | 499 | 69,619 |
| Sept. | 53,484 | 12,392 | 41,092 | 7,993 | 884 | 882 | 640 | 406 | 4,708 | 7,517 | 10,149 | 655 | 1,566 | 504 | 76,446 |
| Oct. | 47,937 | 12,516 | 35,421 | 8,381 | 812 | 1,047 | 671 | 485 | 4,697 | 8,295 | 10,512 | 893 | 1,606 | 445 | 73,265 |
| Nov. | 46,279 | 11,204 | 35,075 | 6,660 | 1,065 | 668 | 672 | 278 | 4,760 | 6,711 | 9,380 | 771 | 1,442 | 535 | 68,017 |
| Dec. | 46,147 | 15,018 | 31,129 | 8,683 | 900 | 930 | 672 | 320 | 5,189 | 8,279 | 11,102 | 966 | 1,674 | 443 | 70,287 |
| 1930: | | | | | | | | | | | | | | | |
| Jan. | 52,535 | 11,773 | 40,762 | 7,741 | 1,560 | 791 | 642 | 386 | 5,709 | 7,831 | 8,928 | 856 | 1,837 | 585 | 77,628 |
| Feb. | 48,947 | 12,960 | 35,987 | 8,055 | 1,245 | 847 | 642 | 469 | 6,900 | 7,191 | 11,414 | 944 | 1,787 | 480 | 75,961 |
| Mar. | 47,320 | 12,236 | 34,084 | 6,617 | 1,129 | 976 | 642 | 391 | 5,796 | 6,612 | 11,214 | 643 | 1,674 | 536 | 70,314 |
| Apr. | 43,803 | 14,627 | 29,176 | 4,444 | 856 | 1,026 | 502 | 366 | 4,802 | 6,326 | 12,724 | 433 | 1,201 | 630 | 62,486 |
| May | 49,016 | 13,253 | 35,763 | 5,968 | 975 | 917 | 502 | 350 | 6,352 | 6,661 | 12,041 | 753 | 1,383 | 555 | 72,220 |
| June | 36,607 | 12,120 | 24,487 | 4,577 | 778 | 1,040 | 201 | 392 | 4,728 | 4,776 | 9,512 | 425 | 974 | 551 | 52,441 |
| July | 41,347 | 12,759 | 28,588 | 3,868 | 792 | 1,087 | 600 | 327 | 6,022 | 5,891 | 9,770 | 648 | 810 | 418 | 58,821 |
| Aug. | 47,802 | 10,304 | 37,498 | 7,077 | 600 | 740 | 600 | 335 | 5,892 | 7,197 | 9,520 | 394 | 809 | 382 | 71,184 |
| Sept. | 48,529 | 8,087 | 40,442 | 7,966 | 343 | 680 | 600 | 289 | 5,960 | 6,358 | 7,302 | 527 | 1,093 | 474 | 72,034 |
| Oct. | 47,770 | 7,312 | 40,458 | 7,681 | 591 | 598 | 650 | 300 | 5,916 | 6,956 | 6,352 | 667 | 669 | 449 | 71,287 |
| Nov. | 41,281 | 7,774 | 33,507 | 6,042 | 864 | 631 | 600* | 311 | 5,334 | 6,401 | 8,001 | 654 | 658 | 238 | 63,241 |
| Dec. | 42,086 | 9,671 | 32,415 | 6,934 | 1,049 | 976 | 600* | 335 | 6,254 | 7,196 | 8,476 | 721 | 1,365 | 353 | 66,674 |
| 1931: | | | | | | | | | | | | | | | |
| Jan. | 41,579 | 11,029 | 30,550 | 6,751 | 1,315 | 770 | 670 | 424 | 5,923 | 7,348 | 10,328 | 914 | 994 | 350* | 66,337 |
| Feb. | 41,951 | 9,672 | 32,279 | 6,345 | 1,041 | 945 | 600* | 409 | 4,869 | 7,206 | 9,001 | 900* | 1,271 | 350* | 65,216* |
| Mar. | 48,589 | 12,009 | 36,580 | 6,217 | 1,209 | 930 | 600* | 536 | 5,434 | 7,104 | 11,258 | 992 | 1,338 | 350* | 72,548 |
| Apr. | 43,453 | 9,977 | 33,476 | 3,487 | | 788 | 600* | 340 | 6,473 | 6,063 | 8,759 | 610 | 629 | 350 | |

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927, 1,437 in 1928, and 2,670 in 1929. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons 1926, about ½ ton in 1927, and 1 ton in 1928. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, 84 tons in 1927, 1,459 tons in 1928, and 1,302 tons in 1929. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

# Net Imports of Crude Rubber into Principal Manufacturing Countries

*(Long Tons)*

| | United States[1] | United Kingdom | France (h) | Germany | Canada (ac) | Japan (da) | Italy | Russia (ce) | Australia (cd) | Belgium (d) | Netherlands | Scandinavia (abcdf) | Spain (g) | Czechoslovakia (abcd) | World Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1919 | 238,407 | 42,671 | 17,685 | 5,584 | 6,395 | 9,753 | 9,894 | 75 | 1,002 | 3,995 | 2,771 | 3,149 | 2,418 | 9 | 343,808 |
| 1920 | 249,530 | 56,844 | 13,885 | 11,890 | 11,746 | 5,297 | 6,123 | 62 | 1,815 | 3,840 | 5,510 | 2,292 | 2,008 | 567 | 371,399 |
| 1921 | 179,786 | 42,087 | 15,135 | 21,920 | 8,124 | 21,713 | 3,906 | 165 | 1,014 | 1,705 | 1,022 | 1,279 | 2,245 | 569 | 300,620 |
| 1922 | 296,594 | 11,724 | 24,352 | 27,546 | 9,207 | 15,934 | 6,430 | 2,493 | 2,643 | 172 | —3,807 | 1,778 | 589 | 567 | 396,013 |
| 1923 | 301,527 | 12,700 | 27,392 | 18,519 | 13,277 | 15,272 | 8,489 | 2,986 | 1,649 | 2,184 | 792 | 2,528 | 630 | 1,128 | 409,173 |
| 1924 | 319,103 | —11,550 | 30,446 | 22,727 | 14,299 | 19,571 | 8,764 | 2,346 | 3,124 | 2,688 | —807 | 3,178 | 944 | 1,370 | 416,203 |
| 1925 | 385,596 | 4,061 | 32,956 | 33,937 | 19,683 | 11,117 | 11,412 | 7,088 | 4,757 | 2,930 | 875 | 3,149 | 1,155 | 1,558 | 520,274 |
| 1926 | 399,981 | 84,865 | 34,240 | 22,775 | 20,229 | 18,125 | 9,809 | 6,529 | 9,021 | 2,498 | 2,670 | 4,046 | 1,299 | 1,870 | 617,957 |
| 1927 | 403,472 | 60,249 | 34,271 | 38,892 | 26,405 | 20,521 | 11,381 | 12,018 | 9,490 | 6,482 | 636 | 4,224 | 2,055 | 2,672 | 632,808 |
| 1928 | 407,572 | 4,846 | 36,498 | 37,855 | 30,447 | 25,621 | 12,433 | 15,134 | 8,430 | 7,958 | 2,243 | 4,418 | 3,178 | 3,138 | 599,771 |
| 1929 | 528,608 | 122,675 | 55,093 | 49,275 | 35,453 | 34,284 | 17,169 | 11,774 | 15,886 | 9,445 | 3,022 | 6,440 | 864 | 4,650 | 894,015 |
| 1929: | | | | | | | | | | | | | | | |
| Apr. | 52,520 | 8,295 | 4,854 | 5,351 | 3,177 | 2,308 | 1,407 | 703 | 1,518 | 750 | 144 | 956 | 40 | 445 | 82,478 |
| May | 48,475 | 5,112 | 3,152 | 3,682 | 2,937 | 2,314 | 1,417 | 996 | 1,437 | 854 | 201 | 468 | 37 | 277 | 71,359 |
| June | 38,821 | 4,787 | 6,814 | 3,948 | 3,075 | 1,593 | 1,624 | 695 | 2,215 | 672 | 687 | 507 | 24 | 520 | 65,882 |
| July | 41,114 | 4,993 | 4,839 | 3,559 | 3,205 | 2,388 | 2,023 | 1,056 | 2,918 | 1,039 | 253 | 519 | 30 | 465 | 68,401 |
| Aug. | 35,397 | 14,594 | 4,645 | 4,082 | 2,879 | 3,663 | 905 | 1,234 | 724 | 902 | 254 | 429 | 25 | 319 | 70,055 |
| Sept. | 32,912 | 17,010 | 3,889 | 4,691 | 1,908 | 3,511 | 1,224 | 1,235 | 853 | 672 | 253 | 361 | 91 | 477 | 68,458 |
| Oct. | 36,040 | 16,111 | 4,489 | 3,355 | 1,821 | 3,902 | 1,838 | 1,073 | 1,125 | 1,147 | 278 | 710 | 91 | 201 | 72,181 |
| Nov. | 41,097 | 13,141 | 3,082 | 3,776 | 2,709 | 3,221 | 1,275 | 1,226 | 1,453 | 361 | 253 | 595 | 62 | 313 | 72,564 |
| Dec. | 40,588 | 12,434 | 4,274 | 2,921 | 2,114 | 2,251 | 1,198 | 1,200 | 726 | 741 | 52 | 677 | 90 | 443 | 69,709 |
| 1930: | | | | | | | | | | | | | | | |
| Jan. | 44,911 | 11,106 | 4,207 | 3,862 | 2,842 | 2,805 | 910 | 826 | 332 | 612 | 209 | 552 | 200* | 577 | 73,949 |
| Feb. | 40,792 | 10,293 | 4,482 | 3,697 | 2,250 | 1,386 | 1,385 | 2,705 | 457 | 1,143 | 188 | 315 | 200* | 239 | 69,553 |
| Mar. | 42,216 | 12,846 | 4,354 | 4,289 | 3,776 | 2,663 | 1,083 | 1,153 | 975 | 678 | 358 | 322 | 200* | 263 | 74,676 |
| Apr. | 43,036 | 13,058 | 5,006 | 4,488 | 2,303 | 2,769 | 2,067 | 929 | 673 | 1,431 | 158 | 461 | 200* | 255 | 76,790 |
| May | 40,012 | 9,861 | 5,233 | 4,379 | 2,593 | 2,699 | 1,279 | 1,645 | 64 | 1,250 | 230 | 274 | 200* | 282 | 65,620 |
| June | 37,374 | 9,645 | 4,458 | 3,794 | 2,579 | 2,677 | 1,378 | 1,574 | 67 | 691 | 343 | 507 | 200* | 282 | 65,620 |
| July | 32,785 | 7,650 | 3,311 | 3,449 | 3,347 | 1,206 | 587 | 567 | 84 | 939 | 172 | 756 | 200* | 342 | 55,395 |
| Aug. | 34,513 | 8,369 | 3,953 | 3,515 | 2,108 | 2,170 | 886 | 149 | 265 | 888 | 37 | 747 | 200* | 450 | 58,250 |
| Sept. | 34,373 | 16,015 | 5,285 | 4,089 | 1,578 | 2,606 | 1,279 | 1,373 | 414 | 824 | 221 | 817 | 200* | 411 | 69,488 |
| Oct. | 44,385 | 9,095 | 7,403 | 3,747 | 1,942 | 3,951 | 2,460 | 2,782 | 609 | 769 | 439 | 1,132 | 200* | 351 | 79,264 |
| Nov. | 28,437 | -250 | 13,662 | 3,074 | 2,128 | 4,003 | 2,510 | 2,140 | 464 | 596 | 364 | 1,180 | 200* | 343 | 58,851 |
| Dec. | 35,202 | 12,249 | 7,149 | 3,105 | 1,347 | 4,104 | 2,815 | 544 | 950 | 814 | 205 | 647 | 200* | 673 | 70,004 |
| 1931: | | | | | | | | | | | | | | | |
| Jan. | 34,892 | 9,730 | 5,954 | 3,847 | 1,709 | 2,861 | 1,036 | 1,775 | 601 | 986 | 348 | 464 | 240 | 635 | 65,015 |
| Feb. | 32,575 | 12,226 | 4,510 | 3,374 | 1,927 | 3,264 | 1,393 | 1,022 | 495 | 785 | 157 | 475 | 201 | 366 | 62,770 |
| Mar. | 37,988 | 12,335 | 4,386 | 3,545 | 3,012 | 2,323 | 418 | | 435 | 862 | 346 | 400 | 392 | | |
| Apr. | 43,036 | 9,440 | | | 2,070 | | 528 | | | | | | | | |

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1]United States imports of guayule are included in this compilation. *Figure is provisional; final figure will be shown immediately it becomes available.

## Domestic Production of Miscellaneous Rubber Goods

| | Rubber Proofed Fabrics | Rubber Heels | Rubber Soles | Mechanical Goods Shipments |
|---|---|---|---|---|
| | Yards | Pairs | Pairs | Dollars |
| 1924 | 25,020,000 | 186,279,000 | (1) | $48,615,000 |
| 1925 | 23,988,000 | 206,970,000 | 16,211,620 (2) | 64,877,000 |
| 1926 | 29,328,000 | 183,312,000 | 12,253,000 | 76,789,000 |
| 1927 | 37,872,000 | 201,014,000 | 27,160,000 | 68,625,000 |
| 1928 | 41,179,000 | 235,170,000 | 37,645,000 | 69,114,000 |
| 1929 | 50,731,000 | 232,126,000 | 34,499,000 | 74,770,000 |
| 1930 | 42,681,000 | 178,059,000 | 29,514,000 | 58,465,000 |
| 1930: | | | | |
| April | 4,029,000 | 17,762,000 | 2,593,000 | 5,989,000 |
| May | 3,597,000 | 15,603,000 | 1,939,000 | 6,163,000 |
| June | 3,379,000 | 15,795,000 | 2,734,000 | 5,318,000 |
| July | 2,940,000 | 15,117,000 | 2,663,000 | 4,910,000 |
| August | 3,458,000 | 13,735,000 | 1,473,000 | 4,552,000 |
| September | 5,046,000 | 14,322,000 | 2,193,000 | 4,083,000 |
| October | 5,209,000 | 16,460,000 | 3,056,000 | 4,186,000 |
| November | 2,822,000 | 11,083,000 | 1,426,000 | 3,400,000 |
| December | 1,909,000 | 13,101,000 | 3,021,000 | 3,338,000 |
| 1931: | | | | |
| January | 2,206,000 | 12,973,000 | 2,481,000 | 3,599,000 |
| February | 2,184,000 | 13,156,000 | 2,724,000 | 3,711,000 |
| March | | 14,661,000 | 2,292,000 | 4,412,000 |

(1) Not available; (2) Last 9 months only.
Source: "Survey of Current of Business of the Department of Commerce."

## United States Imports of Guayule, Balata, Jelutong, Liquid Latex

*(All quantities in Long Tons)*

| | Guayule | | Balata | | Jelutong | | Liquid Latex (1) | |
|---|---|---|---|---|---|---|---|---|
| | Tons | Dollars | Tons | Dollars | Tons | Dollars | Tons | Dollars |
| 1919 | 1,430 | 760,690 | 727 | 937,038 | 8,332 | 2,213,964 | — | — |
| 1920 | 758 | 345,985 | 1,064 | 1,260,043 | 5,672 | 2,068,501 | — | — |
| 1921 | 58 | 26,945 | 814 | 1,077,859 | 1,745 | 351,893 | — | — |
| 1922 | 127 | 57,040 | 812 | 978,765 | 2,335 | 403,812 | — | — |
| 1923 | 1,155 | 542,227 | 700 | 898,524 | 4,565 | 853,308 | — | — |
| 1924 | 1,356 | 536,392 | 464 | 568,456 | 6,165 | 1,237,100 | 2,157 | 864,059 |
| 1925 | 3,781 | 1,803,448 | 517 | 574,750 | 6,749 | 1,642,531 | 3,853 | 3,537,810 |
| 1926 | 4,305 | 2,562,096 | 354 | 327,213 | 7,263 | 3,127,757 | 3,388 | 4,680,386 |
| 1927 | 5,018 | 2,674,957 | 582 | 447,246 | 7,785 | 2,448,657 | 1,116 | 876,077 |
| 1928 | 3,075 | 1,755,685 | 781 | 430,855 | 7,552 | 2,540,059 | 4,167 | 2,185,579 |
| 1929 | 1,231 | 545,175 | 728 | 566,964 | 8,203 | 2,458,136 | 3,728 | 1,787,997 |
| 1930 | 1,096 | 347,388 | 501 | 422,684 | 5,907 | 1,403,244 | 4,449 | 1,506,804 |
| 1930: | | | | | | | | |
| May | 172 | 57,760 | 17 | 13,645 | 602 | 144,415 | 749 | 242,385 |
| June | 168 | 51,561 | 52 | 47,000 | 532 | 120,424 | 389 | 129,368 |
| July | 98 | 26,000 | 24 | 17,463 | 45 | 102,325 | 242 | 78,688 |
| Aug. | 50 | 14,000 | 11 | 5,600 | 766 | 168,511 | 944 | 253,127 |
| Sept. | 100 | 28,000 | 45 | 39,512 | 486 | 86,664 | 402 | 127,751 |
| Oct. | 64 | 18,527 | 36 | 30,702 | 490 | 113,638 | 306 | 99,637 |
| Nov. | — | —— | 73 | 61,650 | 389 | 84,219 | 332 | 65,265 |
| Dec. | — | —— | 90 | 66,198 | 429 | 116,644 | 70 | 20,481 |
| 1931: | | | | | | | | |
| Jan. | — | —— | 46 | 31,870 | 355 | 58,897 | 291 | 70,708 |
| Feb. | — | —— | 17 | 13,801 | 511 | 114,100 | 369 | 89,470 |
| Mar. | — | —— | 66 | 23,568 | 625 | 127,803 | 395 | 75,285 |
| Apr. | — | —— | 219 | 69,284 | 676 | 140,309 | 372 | 73,867 |

(1) Latex import figures not available before 1924.

## Reclaimed Rubber in the United States

*(All Quantities in Long Tons)*

| | Consumption | | | | | Consumption | | | |
|---|---|---|---|---|---|---|---|---|---|
| Year | Production | Tons | % to Crude | Stocks* | Year | Production | Tons | % to Crude | Stocks* |
| 1921 | 36,725 | 41,351 | 24.1 | ..... | 1926 | 180,582 | 164,500 | 45.9 | 23,218 |
| 1922 | 57,834 | 54,458 | 19.3 | ..... | 1927 | 189,144 | 178,471 | 47.6 | 24,980 |
| 1923 | 74,766 | 69,534 | 22.7 | ..... | 1928 | 208,516 | 223,000 | 50.4 | 24,785 |
| 1924 | 80,079 | 76,072 | 22.4 | ..... | 1929 | 218,954 | 226,588 | 48.4 | 27,464 |
| 1925 | 132,930 | 137,105 | 35.6 | 13,203 | 1930 | 146,808 | 155,673 | 39.6 | 24,008 |
| 1929: | | | | | | | | | |
| Jan. | 18,685 | 21,068 | 49.1 | 24,394 | July | 18,387 | 20,236 | 48.7 | 19,679 |
| Feb. | 18,094 | 19,829 | 47.7 | 23,305 | Aug. | 19,787 | 18,230 | 47.6 | 22,309 |
| Mar. | 19,984 | 20,867 | 46.7 | 22,076 | Sept. | 18,660 | 17,071 | 49.2 | 24,984 |
| Apr. | 19,899 | 22,435 | 47.3 | 20,680 | Oct. | 18,865 | 18,744 | 53.8 | 25,117 |
| May | 20,385 | 23,176 | 47.1 | 19,479 | Nov. | 14,363 | 15,330 | 55.4 | 26,080 |
| June | 18,416 | 18,141 | 42.0 | 17,980 | Dec. | 13,429 | 11,531 | 49.0 | 27,464 |
| 1930: | | | | | | | | | |
| Jan. | 15,010 | 17,454 | 47.6 | 24,241 | July | 12,322 | 12,384 | 42.3 | 23,873 |
| Feb. | 15,846 | 14,559 | 44.5 | 24,243 | Aug. | 12,047 | 10,985 | 35.9 | 22,980 |
| Mar. | 17,400 | 15,241 | 42.2 | 24,415 | Sept. | 11,433 | 10,480 | 41.4 | 21,996 |
| Apr. | 17,828 | 16,904 | 42.0 | 24,587 | Oct. | 12,349 | 10,724 | 39.3 | 21,145 |
| May | 17,812 | 17,052 | 42.7 | 25,356 | Nov. | 10,763 | 8,816 | 37.5 | 24,007 |
| June | 15,714 | 14,063 | 40.8 | 24,449 | Dec. | 10,073 | 8,449 | 39.3 | 24,008 |
| 1931: | | | | | | | | | |
| Jan. | 10,349 | 10,728 | 37.6 | 22,429 | July | ..... | ..... | ..... | ..... |
| Feb. | 10,871 | 10,800 | 37.5 | 18,878 | Aug. | ..... | ..... | ..... | ..... |
| Mar. | 12,938 | 12,524 | 38.3 | 18,375 | Sept. | ..... | ..... | ..... | ..... |
| Apr. | ..... | ..... | ..... | ..... | Oct. | ..... | ..... | ..... | ..... |
| May | ..... | ..... | ..... | ..... | Nov. | ..... | ..... | ..... | ..... |
| June | ..... | ..... | ..... | ..... | Dec. | ..... | ..... | ..... | ..... |

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927, 9,577 tons in 1928, and 12,369 tons in 1929.
(Rubber Manufacturers' Association figures raised to 100%)

# REVIEW DESK

***Books, New Publications, Catalogues, Etc.***

1931 YEAR BOOK. Published by the Tire & Rim Association, Inc., 1401 Guarantee Title Building, Cleveland, O. 1931. 154 pp. $2.

This annual volume contains the usual data on standard rim contours, gauges and tolerances, loads and inflations, valves, etc., on passenger car, truck, bus, airplane and motorcycle tires. A 40-page appendix includes information about European rim contours, loads and inflations, embodying the latest data available.

STUDIES IN THE ARTIFICIAL CONTROL OF RAW MATERIAL SUPPLIES: No. 2. RUBBER. By J. W. F. Rowe. Published by the London & Cambridge Economic Service, Houghton Street, Aldwych, London, W. C. 2, England. 1931. 88 pp. 5s.

A study of the rubber industry during the past ten years, this publication gives a detailed account of the Stevenson scheme, its history, working and effects on the industry. Relevant statistics are included, and a lengthy chapter on the Dutch native rubber industry is extremely interesting. It is Mr. Rowe's opinion that the small native rubber holdings in Malaya will in the future become rapidly less productive and decline in importance as compared to the large estates.

SEVENTEENTH ANNUAL REPORT. Published by the International Association for Rubber and Other Cultivations in the Netherlands Indies, N. Doelenstraat 5, Amsterdam, Holland. 1931. 56 pp. For distribution to members.

Problems of labor, taxation, etc., on rubber estates are reviewed in this report in addition its presentation of important statistics on production in the Netherlands East Indies. At the end of 1930, this association had 203 company members and 60 individual members. Suggestions offered for the improvement of Dutch East Indies statistics are treated more fully on Page 227 of this issue. A 12-page report of the association's propaganda department is appended and gives a summary of work done to increase the use of rubber in various directions.

DYKE'S AUTOMOBILE AND GASOLINE ENGINE ENCYCLOPEDIA. By A. L. Dyke. Published by the Goodheart-Willcox Company, Inc., 2009 South Michigan Avenue, Chicago, Ill. 1931. 1339 pp. $7.50.

For more than 21 years this volume has been a standard guide to the construction and operation of the automobile. The current edition is the sixteenth, and new and revised data in many sections bring the encyclopedia up-to-date. There is a 38-page section devoted to tires, tire construction, tire care and repairing. Some of the tables and other data in this section, however, are not so complete and revised to present day conditions as are the parts of the book pertaining to other parts of the car.

TEN YEAR'S EVOLUTION OF MICRONEX. Published by the Binney & Smith Company, 41 East 42nd Street, New York City. 1931. 20 pp. For free distribution.

The development of this carbon black in the course of the past decade is reviewed briefly in this pamphlet, particularly the introduction of special grades for the particular needs of individual customers and industries. This is Chat No. 19 in a series on "The Black Art of Rubber Compounding."

FURTHER TESTS ON BARAK IN COMBINATION WITH THIONEX, CAPTAX AND ALTAX. Published by the Rubber Chemicals Section, E. I. du Pont de Nemours & Company, Wilmington, Del. 1931. 6 pp. For free distribution.

The outstanding feature of compounds that contain Barak in combination with Thionex, Captax, Altax or other acidic accelerator is their extremely flat modulus curve, according to this laboratory report. Stocks that are overcured from 100 per cent to 400 per cent have the same hardness and other physical properties as when correctly cured.

BOILER WATER CONDITIONING. Published by the Elgin Softener Corporation, Elgin, Ill. 1931. 16 pp. For free distribution.

Various problems in the conditioning or treatment of boiler water are discussed in this illustrated booklet at full length.